Markham C. Erickson
202 429 8032
merickson@steptoe.com

1330 Connecticut Avenue, NW
Washington, DC 20036-1795
202 429 3000 main
www.steptoe.com

Steptoe
STEPTOE & JOHNSON LLP

REDACTED – FOR PUBLIC INSPECTION

December 23, 2014

VIA ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Applications of Comcast Corp. and Time Warner Cable Inc. for Consent to Assign or Transfer Control of Licenses and Authorizations, MB Docket No. 14-57

Dear Ms. Dortch:

Pursuant to the *Second Amended Modified Joint Protective Order*[1] ("*Modified Joint Protective Order*") in the above-captioned proceeding, COMPTEL herby submits a public, redacted version of its December 23, 2014 Reply to Comcast's Opposition to Petition to Deny ("Reply"). The "{{ }}" symbols denote where Highly Confidential Information has been redacted. COMPTEL has determined that this Reply contains no Confidential Information pursuant to the *Modified Joint Protective Order*. A Highly Confidential version of this filing is being simultaneously filed with the Commission and will be made available pursuant to the terms of the *Modified Joint Protective Order*.

---

[1] Applications of Comcast Corp. and Time Warner Cable Inc. for Consent to Assign or Transfer Control of Licenses and Authorizations, Docket No. 14-57, *Second Amended Modified Joint Protective Order*, DA 14-1639 (Nov. 12, 2014) ("*Modified Joint Protective Order*").

Steptoe
STEPTOE & JOHNSON LLP

Please contact me with any questions.

Respectfully submitted,

Markham C. Erickson
Counsel for COMPTEL

Enclosure

REDACTED - FOR PUBLIC INSPECTION

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, DC 20554

In the Matter of	)	
	)	
Applications of Comcast Corporation and Time Warner Cable Inc.	)	MB Docket No. 14-57
	)	
For Consent To Assign Or Transfer Control Of Licenses and Authorizations	)	

COMPTEL'S REPLY TO COMCAST'S
OPPOSITION TO PETITION TO DENY

Mary C. Albert
COMPTEL
1200 G Street NW, Suite 350
Washington, DC 20005
(202) 296-6650
malbert@comptel.org

December 23, 2014

SUMMARY

Comcast has yet to demonstrate that the public interest benefits of its proposed merger with Time Warner Cable outweigh the many harms that numerous stakeholders have demonstrated in this proceeding. As such, the Commission should not approve the merger. COMPTEL demonstrates in its Reply some of the potential harms of the proposed merger that have not been adequately addressed.

First, Comcast has failed to demonstrate that the proposed transactions will not adversely affect access to wholesale inputs relied upon by its competitors to provide services in the Time Warner Cable and Charter markets after the relevant contracts expire. In the meantime, Comcast exhorts that post-transaction it will have additional incentive and capability to compete in the retail business market, but fails to indicate whether the network inputs relied upon today by competitors will continue and under what circumstances after their current contracts expire. As a result of the merger, Comcast will have an increased incentive and ability to suppress competition from rivals by withholding access to network inputs, potentially impeding the competition that exists in the marketplace.

Second, the proposed acquisition will result in a significant increase in the number of customers over whose access to the Internet and content on the Internet Comcast will exercise bottleneck control. As a result, Comcast will have enhanced power, incentive, and ability to hinder or suppress access to online video distributer ("OVD") alternatives. Comcast already has used its gatekeeper position to extract access charges from Netflix. Its incentive to engage in such behavior will increase post-transaction. This is especially so for those services that compete directly with its MVPD service as it will want to protect its own linear product from

being displaced by over-the-top ("OTT") alternatives and can raise rivals' costs through access charges.

Third, the transactions will increase Comcast's power to suppress competition in the market for streaming devices. Comcast already has demonstrated its willingness and ability to use its authentication power to prevent its customers from using third-party devices to access certain video content. The acquisition of Time Warner Cable and Charter customers will significantly increase the number of customers that would be impacted by Comcast's refusal to authenticate video content on third-party devices that its customers have paid for; and as a result, Comcast's X1 platform will gain an even stronger foothold in the marketplace.

Fourth, Comcast's newfound scale will result in even lower video content costs for itself—with no commitment to pass those savings to consumers—which will further immunize it from competition in both the broadband and MVPD markets. As the Commission is well aware, consumers still desire linear programming, and competitors must offer it even though most small and mid-sized companies do so at a loss. The core of Comcast's business (bundled video and broadband services) is rarely affected by a competitor that can match it with scale. This will become even more difficult if this merger is approved.

Fifth, Comcast's increase in size will give it a greater incentive to favor its own X1 platform, allowing it to dominate the set top box market and reduce the current innovation in the industry. Moreover, its acquisition of Time Warner Cable, which has been more willing to work with innovative products and devices with its MVPD line-up, significantly reduces the opportunities for innovative products to succeed in the marketplace.

Sixth, the additional clustering that Comcast will enjoy will further increase its incentive and power to engage in raising entry barriers for competitors at the local level.

TABLE OF CONTENTS

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, DC 20554

In the Matter of	)	
	)	
Applications of Comcast Corporation and	)	MB Docket No. 14-57
Time Warner Cable Inc.	)	
	)	
For Consent To Assign Or Transfer Control	)	
Of Licenses and Authorizations	)	

COMPTEL'S REPLY TO COMCAST'S
OPPOSITION TO PETITION TO DENY

COMPTEL, through undersigned counsel, hereby replies to Comcast Corporation and Time Warner Cable Inc.'s ("TWC") Opposition to Petitions to Deny and Response to Comments ("Opposition"). In their Petitions to Deny and Comments on Comcast's proposed acquisition of TWC, COMPTEL, smaller multichannel video programming distributors ("MVPDs"), consumer groups, public interest groups and other parties from all segments of the communications, entertainment, satellite and device manufacturing industries expressed concerns about the negative impacts the acquisition is likely to have on consumers and competition. While Comcast has again stressed in its Opposition the many alleged benefits the proposed acquisition will produce, COMPTEL submits that Comcast still has not met its burden of proving that any potential public interest benefits of the acquisition will outweigh the public interest harms. It also has not shown that, on balance, the acquisition will serve the public interest, convenience, and necessity. For these reasons, COMPTEL respectfully submits that the Commission should deny the above-captioned applications for consent to assign or transfer control of the licenses and authorizations.

I. COMCAST HAS FAILED TO DEMONSTRATE THAT THE ACQUISITION AND DIVESTITURE TRANSACTIONS WILL NOT ADVERSELY AFFECT ACCESS TO WHOLESALE INPUTS

In its Petition to Deny, COMPTEL demonstrated that both TWC and Charter have been active participants in the carrier wholesale market and provide critical inputs that COMPTEL members use to compete in the retail market, including last mile access, high capacity transmission, transport, and high speed Internet services.[1] In the acquisition Application, Comcast described itself as being "active in the wholesale business," but focused only on its provision of wireless backhaul services.[2] COMPTEL expressed concern about the lack of information contained in the acquisition and divestiture applications with respect to Comcast's intention post-transaction to continue offering the wholesale products and services (other than wireless backhaul) that TWC and Charter make available to their wholesale carrier customers today.[3]

In its Opposition, Comcast insists that COMPTEL has:

---

[1] COMPTEL, Petition to Deny, MB Docket No. 14-57, at 2, 10-15 (Aug. 25, 2014) ("COMPTEL Petition").

[2] *Id.* at 10-15 (citing Applications of Comcast Corp. and Time Warner Cable Inc. for Consent to Transfer Control of Licenses and Authorizations, Applications and Public Interest Statement, MB Docket No. 14-57, at 11 (Apr. 8, 2014) ("Application")). Comcast has described how the acquisition of the Charter cable networks and customers will "strengthen Comcast's ability to be a significant option in the competitive wireless backhaul market" but does not address the impact of the acquisition on Charter's wireline carrier wholesale customers. Letter from Francis Buono, Counsel for Comcast, and Samuel Feder, Counsel for Charter, to Marlene Dortch, FCC, MB Docket No. 14-57, at 11 (June 5, 2014).

[3] COMPTEL Petition at 10-15. In its Opposition, Comcast erroneously contends that COMPTEL seeks "wholesale access conditions." Comcast Corporation and Time Warner Cable Inc., Opposition to Petitions to Deny and Response to Comments, MB Docket No. 14-57, at 73 (Sept. 23, 2014) ("Opposition"). Not only did COMPTEL not ask for "wholesale access conditions," it also argued that the Commission should deny the applications because, *inter alia*, the loss of TWC and Charter as wholesale suppliers will lessen competition in both the wholesale and retail markets.

> no basis for assuming that Comcast will eliminate these [wholesale] business arrangements with TWC. And, in fact, Comcast has no such plans to do so. Rather, Comcast intends to honor these existing TWC arrangements and will act in a manner consistent with the terms and conditions of those contracts. Beyond this, Comcast continues to be active in this business services space and is currently in negotiations with a number of competitive providers to provide continued and enhanced wholesale services.[4]

Comcast does not address the impact of the exchange transaction on Charter's wholesale wireline carrier customers, nor does it indicate whether the same or similar wholesale services will continue to be made available by Comcast to existing or new customers once it takes control of the Charter systems and customers. Comcast's silence cannot help but be read to reflect an intention not to pursue the carrier wholesale segment of Charter's business (with the exception of wireless backhaul). Contrary to the public interest, the elimination of a wholesale supplier in the Charter territories will neither preserve nor enhance competition.[5] As the National Broadband Plan recognized, well-functioning wholesale markets are critical to the development and the preservation of competition in the retail market:

> Ensuring robust competition not only for American households but also for American businesses requires particular attention to the role of wholesale markets, through which providers of broadband services secure critical inputs from one another. Because of the economies of scale, scope and density that characterize telecommunications networks, well functioning wholesale markets can help foster retail competition, as

---

[4] Opposition at 194.

[5] *Cf.* Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations by Time Warner Inc. and America Online, Inc., Transferors, to AOL Time Warner Inc., Transferee, *Memorandum Opinion and Order*, 16 FCC Rcd. 6547, 6555 ¶ 21 (2001) ("*AOL Time Warner Order*") (noting that to find that a merger is in the public interest, the Commission must be convinced that it will enhance competition).

> it is not economically or practically feasible for competitors to build facilities in all geographic areas.[6]

The Commission must give substantial weight to the adverse effect the elimination of a wholesale supplier will have on future competition in both the wholesale and retail markets.[7]

Comcast's commitment to honor existing contracts that carriers have with TWC does not fully respond to the issue raised by COMPTEL. The commitment is nothing more than a recognition of TWC's existing legal obligations. Moreover, Comcast does not commit to make available the wide array of wholesale inputs that TWC provides to existing customers[8] once current contracts expire or to make such wholesale inputs available to new customers after the transaction closes. Comcast's responses to discovery requests made at both the state and federal level are equivocal at best and create significant questions with respect to the continuing availability of TWC wholesale inputs.

In response to a data request submitted in the California Public Utilities Commission proceeding, [9] Comcast stated that it will honor, "extend and enhance" TWC's existing wholesale

---

[6] Federal Communications Commission, Connecting America: The National Broadband Plan 47 (2010) ("National Broadband Plan"), *available at* http://transition.fcc.gov/national-broadband-plan/national-broadband-plan.pdf.

[7] Applications for Consent to the Assignment and/or Transfer of Control of Licenses Between Adelphia Communications Corp., Time Warner Inc., and Comcast Corporation, *Memorandum Opinion and Order*, 21 FCC Rcd. 8203, 8218-19 ¶¶ 24-25 (2006) ("*Adelphia Order*") (noting that the Commission's competitive analysis must consider the transaction's effect on future competition).

[8] *See* COMPTEL Petition at 11.

[9] *See* Joint Application of Comcast Corporation, Time Warner Cable Inc., Time Warner Cable Information Services (California), LLC, and Bright House Networks Information Services (California), LLC for Expedited Approval of the Transfer of Control of Time Warner Cable Information Services (California), LLC (U-6874-C); and the Pro Forma Transfer of Control of Bright House Networks Information Services (California), LLC (U-6955-C) to Comcast Corporation Pursuant to California Public Utilities Code Section 854(a), Application No. 14-04-013 (filed Apr. 11, 2014) *available at*

agreements but has made no decisions regarding the availability of other wholesale packages or services.[10] Specifically, Comcast responded that it "*will extend and enhance the wholesale business arrangements that TWC has already established, but has not otherwise made any determinations regarding wholesale services or packages* in California."[11] The fact that Comcast has made no determination with respect to the continuing availability of TWC wholesale services once current contracts expire does not bode well for TWC's wholesale wireline carrier customers.

In response to a data request propounded by the Commission asking for a description of each type of customer class that Comcast serves or desires to serve, Comcast describes the services it provides to other carriers as limited to "cellular tower backhaul services to wireless providers and customer access service [last-mile connectivity] to telecommunications providers more generally."[12] Comcast goes on to state that the acquisition of TWC will "better position the combined entity to serve the rapidly expanding" cellular backhaul market and allow the combined company to offer customer access services to carriers across a much more expanded

---

http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M089/K642/89642501.PDF; Joint Application of Comcast Corporation, Time Warner Cable Information Services (California), LLC (U6874C) and Charter Fiberlink CA-CCO, LLC (U6878C) for Expedited Approval To Transfer Certain Assets and Customers of Charter Fiberlink CA-CCO, LLC to Time Warner Cable Information Services (California), LLC, Pursuant To Public Utilities Code Section 851, Application No. 14-06-012 (filed June 17, 2014), *available at* http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M096/K545/96545976.PDF.

[10] *See* Comcast Corporation, Responses to the California Association of Competitive Telecommunications Companies (CALTEL) First Set of Data Requests, Application Nos. 14-04-012 & 14-04-013, at 13 (Sept. 26, 2014) (emphasis added) (attached here as Exhibit 1).

[11] *Id.*

[12] Comcast Corporation, Responses to the Commission's Information and Data Request, MB Docket No. 14-57, at 209 (Sept. 11, 2014) ("Comcast Responses to Commission").

service area.[13] In Comcast's explanation of the synergies and efficiencies the acquisition of TWC will produce, however, it limits its discussion to residential, retail business, and wireless backhaul services and makes no mention of wireline carrier access services. Indeed, Comcast states that the "transaction will provide the combined company the scale and scope needed to invest and compete more effectively against well-established incumbents for two business customer categories: (1) medium-sized, regional, super-regional, and even enterprise businesses; and (2) wireless backhaul services."[14] Eliminating a source of wholesale inputs used by wireline carriers that compete for business customers will also enhance the combined company's ability to "compete more effectively against well-established incumbents."[15]

In its Opposition, Comcast again emphasizes that the acquisition of TWC will allow it to increase its presence and compete more effectively in the retail business market and the wireless backhaul market.[16] As a result of its plan to capture a larger segment of the business market, the acquisition will also increase Comcast's incentive and ability to suppress competition from rivals in that business market, including COMPTEL member companies. One very effective means of suppressing competition would be to limit or withdraw the wide array of TWC wholesale products and services[17] that competitors use to serve business customers once existing (or "extended") agreements terminate and to stop offering those wholesale products and services to new customers once the transaction closes. Elimination of TWC as a wholesale supplier may

---

[13] *Id.*

[14] *Id.* at 222; *see generally id.* at 216-26.

[15] *Id.* at 222.

[16] Opposition at 1, 68-74.

[17] TWC's wholesale offerings include "high-capacity transmission services (such as Metro Ethernet), video, high-speed Internet, and voice, as well as hosting and cloud computing services" and transport services. Application at 15.

remove the only alternative that wireline telecommunications carriers have to the incumbent local exchange carrier's wholesale services in TWC's franchise areas. Even if Comcast does continue to offer wholesale last mile access services to wireline carrier customers in TWC's service areas, it would have the incentive and ability to raise the prices it charges its competitors for those services post-transaction in an effort to disadvantage them in the retail marketplace and allow it to "compete more effectively."[18]

Foreclosing its rivals from accessing a source of wholesale inputs used to provide services that would compete with Comcast's retail business services and/or raising the rates for the wholesale inputs it does make available would substantially frustrate and impair the preservation and enhancement of competition. Accepting Comcast's arguments that the transactions will benefit the public interest by making it a stronger competitor in the retail business and wholesale wireless backhaul markets, that benefit must be balanced against the harm to the public interest caused by the loss of a wholesale supplier (Charter) in such important markets as New York, Los Angeles, Boston, Atlanta, Houston, and Dallas, among others, and the loss of a second wholesale supplier (TWC) in those same markets once the transaction closes (for new customers) and/or once the contracts of existing TWC customers expire. Comcast's assertion that "[a]fter the Transaction closes, customers in the . . . former TWC and Charter markets at issue will have at least as many providers to choose from . . . as they have today,"[19]

---

[18] As COMPTEL noted in its Petition to Deny, TWC reported that as of December 31, 2013, it had extended fiber and coaxial cable to connect 860,000 commercial buildings to its network. COMPTEL Petition at 13. The loss of TWC as a source of last mile wholesale access to so many commercial buildings would be substantial, especially where TWC is the only alternative to the incumbent local exchange carrier.

[19] Opposition at 12.

may be true for retail customers, but it simply does not hold true for new and existing wholesale carrier customers of TWC and Charter.

Contrary to Comcast's allegation, COMPTEL did not "seek wholesale access conditions" in its Petition to Deny.[20] Rather, it urged the Commission to consider the impact the loss of TWC and Charter as wholesale suppliers will have on competition in both the wholesale and retail markets. Given the critical role that the wholesale market plays in fostering retail competition, foreclosure of access to sources of wholesale inputs will have a negative impact on future competition in the retail market and must be given significant weight as the Commission compares the potential plusses against the potential minuses of the transaction.[21] To further the public interest in promoting the availability of customer choice in providers, the Commission must encourage the development and preservation of a strong wholesale market rather than sanction the elimination of wholesale providers through approval of the transactions at issue.

II. FURTHER CONSOLIDATION OF COMCAST'S CONTROL OVER ACCESS TO THE INTERNET AND INTERNET CONTENT WILL HARM COMPETITION FROM OVDS

Although Comcast attempts to downplay the significance of the number of broadband subscribers it will acquire in the TWC transaction and repeatedly asserts that there will be no reduction in the number of broadband provider alternatives available to retail end users,[22] the acquisition will result in a dramatic increase in the number of customers over whose access to the

[20] *Id.* at 73 & n.190.

[21] To find that a transaction is in the public interest, the "Commission must 'be convinced that it will enhance competition.'" *AOL Time Warner Order*, 16 FCC Rcd. at 6555 ¶ 21; *see also* Applications of AT&T Wireless Services, Inc. and Cingular Wireless Corporation For Consent to Transfer Control of Licenses and Authorizations, *Memorandum Opinion and Order*, 19 FCC Rcd. 21522, 21544-45 ¶ 42 (2004) (noting the Commission's obligation to analyze the "merger's effect on future competition").

[22] *See* Opposition at 12, 22-23, 32, 44, 46, 138, 144, 146 & n.452, 176.

Internet and content available over the Internet Comcast will exercise bottleneck control. COMPTEL demonstrated in its Petition to Deny that Comcast's control of the bottleneck local access facilities, together with its national market share and ownership of key video programming assets will give Comcast a unique ability and incentive to engage in anticompetitive acts that can suppress the delivery of information to its end users and block or degrade the quality of access to certain content and content providers.

A. The Transactions Will Increase Comcast's Power And Incentive To Hamper Or Suppress Access To OVD Alternatives

Comcast insists[23] that the only relevant geographic market for analyzing the extent of competition in retail video and broadband services is the cable operator's local franchise area because consumers make decisions based on the MVPD and broadband choices available at their residences.[24] Comcast also asserts that the commenters' label of the "'national market for high-speed broadband distribution of edge provider content' has been fabricated from whole cloth."[25] While the local market may be appropriate for evaluating the retail choices available to end users, the Department of Justice has also determined that there is a separate national market for the aggregation and distribution of residential broadband content.[26] Content providers "produce most broadband content with national distribution in mind, largely in order to maximize the

[23] *Id.* at 20, 116-18, 176.

[24] *But see Adelphia Order*, 21 FCC Rcd. at 8218-19 ¶ 25 (describing the broad ambit of the Commission's competitive analysis).

[25] Opposition at 115.

[26] *See* Competitive Impact Statement, *United States v. AT&T Corp.*, No. 1:00-cv-01176, at 1 (D.D.C. May 25, 2000), *available at* http://www.justice.gov/atr/cases/f4800/4842.htm.

potential number of consumers they will reach."[27] Thus, Comcast's claim that commenters have fabricated a national market for the distribution of broadband content has no basis in reality.

Upon execution of the proposed transactions, Comcast claims it will only serve 35 percent of the fixed wireline broadband subscribers in the United States receiving speeds of at least 3 Mbps download and 768 Kbps upload.[28] But this 35 percent figure does not capture the true control Comcast will have over the residential broadband market. Actual high-speed Internet service requires download speeds above 3 Mbps. The Commission, recognizing the need for faster service, now requires companies receiving Connect America funding to provide rural consumers with fixed broadband download speeds of 10 Mbps or better.[29] Chairman Wheeler called 4 Mbps "yesterday's broadband" and insisted that a "25 Mbps connection is fast becoming 'table stakes' in 21st century communications."[30] At these higher speeds, a merged Comcast would control an even greater market share. The Media Bureau calculates that Comcast will provide service to {{   }} percent of subscribers with fixed broadband Internet

[27] *Id.* at 9.

[28] *See* Letter from Kathryn Zachem, Comcast Corporation, et al., to Marlene Dortch, FCC, MB Docket No. 14-57, at 2 (June 27, 2014) (observing that post-merger and post-divestiture, Comcast will have 27.9 million fixed broadband subscribers). According to the Commission's latest tally, there were a total of 94.2 million fixed wireline broadband customers nationwide and 70 million with speeds of at least 3 Mbps down and 768 Kbps up as of June 30, 2013. *See* Industry Analysis and Technology Division, Wireline Competition Bureau, FCC, Internet Access Services: Status as of June 30, 2013, at 1, 5 fig. 3(a) (2014), *available at* https://apps.fcc.gov/edocs_public/attachmatch/DOC-327829A1.pdf.

[29] Press Release, FCC, FCC Increases Rural Broadband Speeds Under Connect America Fund, Press Release (Dec. 11, 2014).

[30] Tom Wheeler, Chairman, FCC, Prepared Remarks at the 1776 Headquarters, Washington DC: The Facts and Figures of Broadband Competition, at 2-3 (Sept. 4, 2014), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0904/DOC-329161A1.pdf.

download speeds of 10 Mbps and {{ }} percent of subscribers with download speeds of 25 Mbps.[31]

And these figures do not even begin to properly state Comcast's post-transaction power over the Internet ecosystem. While a Comcast end user may be able to switch broadband providers (if and where there is an alternative available and the cost and inconvenience of switching is not too high), Comcast has a terminating monopoly over access to its end users. As the Commission recognized in its *Open Internet Notice of Proposed Rulemaking,* both edge providers and end users seeking access to edge providers are subject to the gatekeeper control of a retail broadband provider. The end user has only one network option to reach a given edge provider's content and the edge provider's content must be delivered to the end user over those same network facilities.[32]

Comcast acknowledges that it is the "means of access for any and all of the Internet content" its customers want.[33] COMPTEL argued in its Petition to Deny that Comcast's control over the "means of access" all edge providers need to reach its customers allows it to also control the Internet content and the quality of that content its customers receive.[34] As the gatekeeper both to its end users and to OVDs, Comcast has both the incentive and the ability to degrade the delivery of services that its subscribers request from video competitors in order to make its own

---

[31] {{ }} The 25 Mbps figure likely undercounts the combined entity's share of 25 Mbps subscribers, because TWC has aggressively rolled out 25 Mbps-plus connections in its service areas during 2014.

[32] *See* Protecting and Promoting the Open Internet, *Notice of Proposed Rulemaking*, 29 FCC Rcd. 5561, 5577-78 ¶ 46 (2014) ("*Open Internet NPRM*").

[33] Application at 6.

[34] COMPTEL Petition at 20.

video on demand and other subscription services appear more attractive. Comcast also has the incentive and the ability to demand access charges from edge providers seeking to deliver competitive video services that Comcast subscribers request over the broadband Internet access connections for which they have paid.[35]

The acquisition of TWC will substantially increase Comcast's share of the national market for distribution of residential broadband content. As a result, its leverage to demand access fees from OVD providers to reach its end users and to degrade delivery for those who decline to pay will increase accordingly.[36] In their oppositions to the transactions, a number of parties raised the issue of Comcast's use of congestion at interconnection points as leverage to demand payment from third party networks carrying Netflix traffic and Comcast's refusal to augment capacity sufficiently to relieve the congestion and stem the buffering, slow speeds and download delays that Comcast customers were experiencing as they tried to access Netflix's OVD offerings in the absence of payment.[37] In response, Comcast alleges that "Netflix deliberately sent its traffic on routes that could not support it, and ignored other routes that could

---

[35] *Id.* at 19-22.

[36] *Id.* at 20-22.

[37] *See, e.g.*, Netflix, Inc., Petition to Deny, MB Docket No. 14-57, at 56-62 (Aug. 27, 2014) ("Netflix Petition"); Cogent Communications Group, Inc., Petition to Deny, MB Docket No. 14-57, at 22-23 (Aug. 25, 2014) ("Cogent Petition"); Public Knowledge and Open Technology Institute, Joint Petition to Deny, MB Docket No. 14-57, at 5 (Aug. 25, 2014); Consumers Union and Common Cause, Joint Petition to Deny, MB Docket No. 14-57, at 23-26 (Aug. 25, 2014); Consumer Federation of America, et al., Petition to Deny, MB Docket No. 14-57, at 39, 56-57, Exhibit I-2 (Aug. 25, 2014); Free Press, Petition to Deny, MB Docket No. 14-57, at 52-53 (Aug. 25, 2014); DISH Network Corporation, Petition to Deny, MB Docket No. 14-57, at 58-59 (Aug. 25, 2014); COMPTEL Petition at 19-21; *see also* Letter from Joseph Cavender, Level 3, to Marlene Dortch, FCC, GN Docket No. 14-28, at 2-3 (Sept. 8, 2014).

easily have handled it."[38] Comcast's response is nonsensical.[39] Comcast failed to identify any possible motive that Netflix would have to degrade the quality of the video or of the viewing experience made available to its customers. Indeed, any such deliberate action by Netflix would only make Comcast's rival video on demand and other linear video subscription services appear more attractive and encourage Netflix customers to abandon the service.

Netflix contends that it "purchased all available capacity on settlement-free transit routes into Comcast's network," but was still unable to sufficiently alleviate the congestion.[40] Netflix has further shown that Comcast refused Netflix's offer to deploy Open Interconnect Appliance servers[41] at locations of Comcast's choosing in an effort to relieve the congestion and declined to augment capacity at congested interconnection points unless and until Netflix paid Comcast access charges to deliver the content to its customers.[42] Netflix ultimately agreed to a direct interconnection arrangement with Comcast and to the payment of access charges as a means of ensuring that Comcast delivered its content to end users without the degradation caused by having to pass through congested interconnection points.

---

[38] Opposition at 17, 222.

[39] Comcast even suggested that Netflix could "rely on Cogent to reach Comcast." Opposition at 219. As Comcast well knows, Netflix did rely on Cogent to reach Comcast but Comcast refused to upgrade its connections and add capacity that "led to significant amounts of congestion at Cogent's interconnection points with Comcast." Cogent Petition at 27.

[40] Netflix Petition at 61.

[41] Netflix created the Open Connect Content Delivery system to efficiently deliver content to broadband Internet access service providers. The servers are designed with sufficient capacity to accommodate end users' current and future Netflix streaming video viewing needs. See *ISP Partnership Options*, Netflix, https://openconnect.itp.netflix.com/deliveryOptions/index.html (last visited Dec. 23, 2014).

[42] Netflix Petition at 56, 62.

Comcast insists that by entering into the direct interconnection agreement, Netflix was simply able to cut out the "middlemen" – *i.e.*, the third party transit providers that had been carrying Netflix's content to Comcast's network.[43] What Comcast fails to acknowledge, however, is that Netflix continues to bear the cost of delivering its traffic to the Comcast interconnection points as well as the cost of storing its content closer to customers. The only thing for which Netflix pays Comcast is access to its customers – *i.e.*, those Comcast broadband customers that have requested the Netflix content and that have paid Comcast for the bandwidth necessary to receive that content without buffering, throttling, or other degradation.[44]

Although Comcast counters that it has never let its interconnection links become congested,[45] a study conducted by Measurement Lab suggests otherwise, noting "sustained performance degradation experienced by customers of" Comcast when traffic passed over its interconnection points with three different Tier 1 transit providers.[46] Comcast also contends that degrading OVD access would be irrational because it would harm its broadband business and possibly cause it to lose broadband customers.[47] It cites the "brief period in late 2013 and early 2014 when Netflix quality declined in some cases to Comcast customers during the Netflix/Cogent dispute with Comcast"[48] when it "experienced a surge in Netflix-related customer

---

[43] Opposition at 226, 232.

[44] Netflix Petition at 66, 68.

[45] Opposition at 219.

[46] Measurement Lab Consortium, ISP Interconnection and its Impact on Consumer Internet Performance, at 4 (Oct. 28, 2014), *available at* http://www.measurementlab.net/static/observatory/M-Lab_Interconnection_Study_US.pdf.

[47] Letter from Kathryn Zachem, Comcast, to Marlene Dortch, FCC, MB Docket No. 14-57, at 13-18 (Nov. 26, 2014) ("November 26 Zachem Letter").

[48] *Id.* at 14.

service calls." Rather than increase capacity at the interconnection point with Cogent to improve the quality of the Netflix transmissions in response to those customer complaints, Comcast held out until Netflix agreed to pay access charges to reach its customers. While degrading OVD access may be "irrational" behavior for a broadband provider, Comcast was apparently willing to engage in such irrational behavior at the expense of its customers in order to obtain access charges from Netflix.[49]

The acquisition of the TWC and Charter broadband customers will strengthen Comcast's position of control over the national broadband content distribution market and its control over the Internet content and the quality of the content its customers receive. Comcast's bottleneck control will allow it to engage in anticompetitive activities, including foreclosing access to its customers by failing to relieve congestion at interconnection points and raising the costs of rival video content providers through the imposition of access charges. Comcast alleges that the "transaction will not give the merged firm an enhanced incentive to degrade or block OVD access to Comcast's broadband customers."[50] Comcast already has demonstrated that it has the ability and incentive to demand access charges from edge providers, transit providers and content delivery networks to reach Comcast subscribers with over-the-top video offerings that compete with Comcast's own and to degrade delivery if payment is not made. Accepting for the sake of argument Comcast's contention that the transactions will not give the merged firm an *enhanced*

---

[49] Comcast asserts that customers have the option to switch to another broadband provider if Comcast were to degrade access to OVDs. *Id.* at 15-17. As the Commission has determined, however, customers may incur significant costs when switching from one broadband provider to another, and these costs serve as a deterrent to switching. *Open Internet NPRM*, 29 FCC Rcd. at 5576 ¶ 42. Comcast's acknowledgment that the impact on churn during the period of degraded Netflix service and the surge in Netflix-related complaints confirms the lack of ease in switching broadband providers.

[50] November 26 Zachem Letter at 11.

incentive to degrade or block OVD access to its customers, the transactions will still allow the merged firm to potentially degrade or block OVD access to 8 million *additional* customers.

If a provider as large and popular as Netflix was forced to succumb to Comcast's demand for access charges, smaller competitors and startups offering innovative video applications and content may be discouraged from entering the market when confronted not only with the costs of transmitting their content to broadband service providers but also the access fees Comcast imposes to provide an uncongested connection to its end users. While Comcast characterizes the interconnection fees it charges Netflix and others as "trivial,"[51] "modest," and an "immaterial portion of their costs,"[52] Netflix has asserted that the "additional access fee Comcast charges Netflix to transport data over the consumer's broadband access service . . . compris[es] over 60% of Netflix's total cost of delivering traffic to Comcast's customer[s]."[53]

In analyzing the competitive harms that may result from the joinder of the two largest MVPDs and broadband Internet access service providers in the United States, the Commission must give substantial weight to its prior determination that vertically integrated ISPs like Comcast "have incentives to interfere with competitive services and . . . incentives to accept fees from edge providers."[54] The Commission must also give substantial weight to the contribution that "innovative streaming video applications and independent sources of video content"[55] have made to the virtuous cycle of innovation that has increased broadband demand, network

---

[51] *Id.*

[52] Opposition at 225.

[53] Letter from Christopher Libertelli, Netflix, to Marlene Dortch, FCC, GN Docket No. 14-28, MB Docket Nos. 14-57, 14-90, at 5 (Nov. 5, 2014).

[54] *Open Internet NPRM*, 29 FCC Rcd. at 5576 ¶ 43.

[55] *Id.* at 5570 ¶ 26.

investments and broadband deployment. A recent study by Parks Associates shows that non-linear video now accounts for 49 percent of the video watched on television sets.[56] As broadband subscribers continue to demand more bandwidth-intensive, latency-sensitive applications and services, Comcast's incentive and ability to demand payment from the edge, transport and CDN providers delivering the traffic that its tens of millions of subscribers request will increase, especially where that traffic is generated by services that compete with services offered by Comcast. Such practices cannot help but threaten the virtuous cycle by chilling entry and innovation by edge providers, impeding competition and dampening consumer demand.[57]

Comcast disputes that the combined company will be able to threaten OVD viability by blocking access to its network on the grounds that OVD providers will still have access to all but 36 percent of the wired broadband market nationwide, more than enough to survive and flourish.[58] But even assuming *arguendo* that this was true, Comcast's ability to block or degrade access to competing OVDs would still have a substantial anticompetitive impact on both consumers and innovation. When more than one-third of wired broadband subscribers nationwide are unable to access content from an OVD offering content that competes with Comcast's own, it is Comcast, not its end users, that determines what the end users view and Comcast, not its end users, that determines the success or failure of any particular OVD offering. "By exploiting its 'gatekeeper' position in the residential broadband content market," Comcast "could make it less profitable for unaffiliated or disfavored content providers to invest in the

---

[56] *See Parks Associates: U.S. Broadband Households Watch 17.4 Hours of Non-Linear Video Per Week*, FierceOnlineVideo (Oct. 23, 2014), http://www.fierceonlinevideo.com/press-releases/parks-associates-us-broadband-households-watch-174-hours-non-linear-video-w.

[57] *Open Internet NPRM*, 29 FCC Rcd. at 5570 ¶ 26.

[58] Opposition at 223-24.

creation of attractive broadband content, and thereby reduce the quantity and quality of content available."[59]

Although the Department of Justice was addressing the issue of access to Comcast programming by rival MVPDs and OVDs, rather than access to end users by rival OVDs, its findings in the Comcast/NBC Universal case apply with equal force to the transactions at issue here:

> Because Comcast would face less competition from other video programming distributors, it would be less constrained in its pricing decisions and would have a reduced incentive to innovate. As a result, consumers likely would be forced to pay higher prices to obtain their video content or receive fewer benefits of innovation. They also would have fewer choices in the types of content and providers to which they would have access, and there would be lower levels of investment, less experimentation with new methods of delivering content, and less diversity in the types and range of product offerings.[60]

There is no question that the transactions will significantly increase the number of consumers whose access to the Internet and content available over the Internet that Comcast will control and that such control may be used to thwart or disadvantage rivals. Comcast has failed to demonstrate that whatever alleged benefits the transactions may produce outweigh the transactions' anticompetitive impact on consumers and the broadband distribution market.

B. The Transactions Will Increase Comcast's Power To Suppress Competition In The Market For Streaming Devices

In its Petition to Deny, COMPTEL asserted that Comcast's acquisition of TWC will significantly increase the number of customers over whose access to streaming video services

---

[59] Amended Complaint, *United States v. AT&T Corp.*, No. 1:00-cv-01176, ¶ 34 (D.D.C. May 26, 2000), *available at* http://www.justice.gov/atr/cases/f4800/4840.htm.

[60] Competitive Impact Statement, *United States v. Comcast Corp.*, No. 1:11-cv-00106, at 27 (D.D.C. Jan. 18, 2011), *available at* http://www.justice.gov/atr/cases/f266100/266158.htm.

through third party devices Comcast can and will restrict.[61] Comcast has demonstrated its willingness and ability to use its authentication power to prevent its customers who are HBO subscribers from using a Roku or PlayStation 3 streaming device to access HBO Go content on television sets without using a cable set-top box.[62] The Justice Department has previously determined that authentication is a means by which Comcast can counter the perceived competitive threat posed by online video distributors.[63] Comcast does so by using its authentication power to block its subscribers' access to HBO Go from certain third party streaming platforms in violation of the Commission's no-blocking rule.[64]

In response, Comcast contends that COMPTEL's allegation is not transaction specific.[65] Comcast is wrong. Post-transaction, Comcast will occupy a significantly larger geographic footprint and will serve significantly more customers. This growth will enhance Comcast's ability to harm independent streaming device manufacturers as well as consumers. Both TWC

---

[61] *See* COMPTEL Petition at 22.

[62] Comcast's authentication system enables its cable subscribers to view some video content over the Internet if the subscriber already pays for and receives the same content through Comcast's traditional cable service. *See generally TV Everywhere on Network Websites and Apps*, Comcast Xfinity, http://customer.comcast.com/help-and-support/cable-tv/online-tv-through-partner-sites/ (last visited Dec. 23, 2014). Comcast also authenticates third-party apps for use on streaming platforms such as Roku and PlayStation 3. *See* Matt Strauss, *HBO Go & Showtime Anytime on Roku Players and Roku TV: Now Available for Xfinity TV Customers*, Comcast Voices (Dec. 16, 2014), http://corporate.comcast.com/comcast-voices/hbo-go-showtime-anytime-on-roku-players-and-roku-tv-now-available-for-xfinity-tv-customers.

[63] *See* Competitive Impact Statement, *United States v. Comcast Corp.*, No. 1:11-cv-00106, at 19 (D.D.C. Jan. 18, 2011), *available at* http://www.justice.gov/atr/cases/f266100/266158.htm.

[64] 47 C.F.R. § 8.5(a), *vacated Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014). Although the D.C. Circuit vacated the no-blocking rule, Comcast is still bound by its voluntary commitment to comply with the open Internet rules as a condition of approval of the Comcast/NBCU transaction. Comcast has also committed to extending that compliance to the TWC and Charter customers it will acquire in the transactions at issue here. Opposition at 48.

[65] Opposition at 178-79.

and Charter have consistently allowed their customers to access HBO Go using third-party devices, such as Rokus and PlayStations.[66] With Comcast, those devices face the uncertainty that Comcast may chose, at any time, to impede the access of Comcast's own subscribers, if they choose a third-party streaming box. Indeed, while Comcast has relented under public and regulatory pressure to permit its Roku users to access HBO Go,[67] Comcast still prohibits authentication on other popular devices, such as the Playstation 3 and Playstation 4. Post-transaction, that public harm will be visited upon an additional 8 million customers who currently are able to enjoy such access as customers of TWC and Charter.

TWC customers may also lose their ability to access the entire TWC video programming lineup using a Roku device. TWC has developed a Roku app that enables its customers to access virtually the entire TWC cable service offering on a Roku streaming player. By using this app, TWC customers would not need to rent or buy additional cable set-top boxes to view their TWC cable service on other television sets.[68] Post-transaction, Comcast could rescind the ability of the former TWC subscribers to use this app on the Roku platform, which would in turn limit customer choice and force those subscribers to rent or buy additional set-top boxes.

While Comcast acknowledges that TWC "has led in terms of authenticating various [TV Everywhere ("TVE")] services on different devices," it does not commit that TWC customers will continue to have access to their entire video lineup using a Roku device post transaction, or

---

[66] *See HBO Go Help*, Roku, http://support.roku.com/entries/22287264-HBO-GO-Help (last visited Dec. 23, 2014); *Activate Device*, HBO Go, http://www.hbogo.com/activate/ (last visited Dec. 23, 2014).

[67] *See* Letter from Jonathan Kanter, Roku, to Marlene Dortch, FCC, MB Docket No. 14-57, at 1 (Dec. 15, 2014).

[68] *See* Roku, Inc., Comments, GN Docket No. 14-28, at 11 (July 15, 2014) ("Roku Comments").

access to HBO Go on a PlayStation 3 device.[69] Rather, it states that the combined company "will seek to adopt the best approach going forward."[70] Comcast also strongly suggests what that approach going forward will be:

> Meanwhile, Comcast has advanced beyond TWC in terms of making sure its customers have a robust TVE experience delivered *by* Comcast, over-the-top, on a host of devices, through Comcast's own applications and websites. Comcast believes that customers value the ability to access a wide range of TVE content through one aggregated source, rather than having to jump from one programmer app to another, and Comcast's TVE services aim to satisfy that demand. Comcast customers have access to 300,000-plus streaming choices, including over 50 live TV channels, via the XfinityTV.com website. . . . These live channels and over 25,000 on-demand choices are also available via the Xfinity TV Go app. . . .[71]

Thus, Comcast, in its role as gatekeeper to its end users, has determined that customers should access over-the-top video using Comcast's "own applications and websites," apparently without regard to its customers' actual preferences.[72] This top-down control also prevents customers from the serendipitous discovery of new apps and websites, lowering the chance that a new entrant will develop into a viable competitor.

Comcast also claims that it was not violating the no-blocking rule by refusing to authenticate that a Roku or PlayStation 3 user is a Comcast subscriber that pays it for HBO

---

[69] Opposition at 184.

[70] *Id.*

[71] *Id.* at 184-85 (emphasis in original).

[72] Comcast customers have voiced extreme displeasure at being unable to access HBO Go using a Roku or PlayStation 3 streaming device. *See, e.g.*, *XfinityTV Website*, Comcast Support Forum, http://forums.comcast.com/t5/XfinityTV-Website/ROKU-HBO-GO/td-p/1100271/page/40 (including more than 2,100 posts from users related to HBO Go access via Roku); *Video on Demand*, Comcast Support Forum, http://forums.comcast.com/t5/Video-On-Demand/no-ps3-support-for-hbo-go/td-p/2062841/page/3 (including 150 posts from users related to HBO Go access via PlayStation 3).

service because it "places no restrictions on the ability of a customer to connect and use Roku, PlayStation 3, or any other Internet-connected devices."[73] It is difficult to reconcile Comcast's assertion that it places no restrictions on the ability of its customers to (previously) use a Roku or (currently) use a PlayStation 3 streaming devices with its refusal to authenticate. Comcast's refusal to authenticate does in fact restrict and indeed blocks its HBO customers from accessing HBO Go.

The no-blocking rule prohibits Comcast from "block[ing] lawful content, applications, services or non-harmful devices."[74] Comcast remains subject to the no-blocking rule as a result of the voluntary commitment it made to secure approval of its acquisition of NBC Universal.[75] Whether Comcast is refusing to authenticate because it wants its customers to access HBO Go content through its own set-top boxes, X1 or Xfinity platform, through other third-party devices,[76] or for some other reason, its anticompetitive and discriminatory authentication policy is harmful to both its customers (by prohibiting use of the streaming devices of their choice to

---

[73] Opposition at 186 n.575.

[74] The no-blocking rule provides that "[a] person engaged in the provision of fixed broadband Internet access service, insofar as such person is so engaged, shall not block lawful content, applications, services, or non-harmful devices, subject to reasonable network management." 47 C.F.R. § 8.5(a), *vacated Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014). As noted above, Comcast remains bound by the rule although it is no longer generally in effect.

[75] *See* Applications of Comcast Corporation, General Electric Company and NBC Universal, Inc. for Consent to Assign Licenses and Transfer Control of Licenses, *Memorandum Opinion and Order*, 26 FCC Rcd. 4238, 4275 ¶ 94 (2011); *see also* Opposition at 48.

[76] Comcast does allow its customers to access HBO Go from the Xbox 360, iPhones, iPads, Apple TV, Android Phones and Tablets, Kindle Fire, Samsung Smart TV, and Chromecast, and recently started allowing access from Roku. *See It's HBO. Anywhere.*, HBO, http://www.hbogo.com/#devices/, (follow "See what devices are accessible through your provider;" then follow "Comcast Xfinity") (last visited Dec. 23, 2014).

view content of their choice), and to the device manufacturers (by impairing the functionality and utility of their platforms to stream content of the customer's choice).

As Roku noted in its Comments, its business is enabled by and entirely dependent upon the unfettered ability of consumers to access lawfully available content over a broadband Internet connection to their home.[77] The Commission made clear in adopting the Open Internet rules in 2010 that the rules "prevent certain forms of blocking and discrimination with respect to content, applications, services and *devices that depend on or connect to the Internet*."[78] As noted above, those rules still apply to Comcast through the conditions adopted on its purchase of NBC-Universal. Comcast's discriminatory authentication policy gives it the power to control what video programming content its broadband subscribers can access, the means by which they can access that content and the ability to favor its own cable and streaming products and services over Internet video streaming products and services provided by competitors.

Given the increasing popularity of streaming video as an alternative (or at the very least a strong complement) to linear cable television service, Comcast's refusal to authenticate inflicts significant harm on the manufacturers of devices that enable the delivery of video content in a manner separate from and competitive with Comcast's own linear cable and streaming services. Comcast has already shown that it has the incentive and ability to use its authentication power to inflict competitive harm. The acquisition of the TWC and Charter customers will significantly increase the universe of end users whose access to video content for which they have already

[77] *See* Roku Comments at 4-5.

[78] Preserving The Open Internet, *Report and Order*, 25 FCC Rcd. 17905, 17907-08 ¶ 5 (2011) (emphasis added).

paid is restricted to devices of Comcast's choice.[79] Approval of the transaction will neither promote nor enhance competition or customer choice. Instead, it will magnify Comcast's ability to suppress competition from independent device manufacturers that would allow its customers to access on-line video programming without using Comcast's set-top boxes and stifle technological innovation.

III. THIS TRANSACTION WILL HARM COMPETITION FROM COMPETING BROADBAND AND MVPD PROVIDERS

The death of traditional cable video services has been greatly exaggerated. Most consumers today still purchase both broadband and video services together as a single, bundled service.[80] As a result, overbuilding cable and telephone company systems must be able to compete in video services and any impediment to their ability to profitably offer video necessarily harms their ability to competing in broadband services as well.

Comcast's newfound scale will immunize it from competition from telephone companies and overbuilding cable operators. While Comcast makes significant profit from video (indeed most of its profits),[81] the service is a loss-leader for many small- and medium-sized cable and telephone company providers, used simply to allow the competitive offering of broadband services.[82] Comcast's scale also gives it certain significant advantages over competing video

---

[79] For example, Comcast boasts that its X1 platform allows customers to "stream practically their entire cable channel lineup, including must-carry stations and PEG channels, to computers, smartphones, and tablets in the home." Application at 80.

[80] National Broadband Plan at 38 ("[T]he vast majority of consumers purchase broadband bundled with voice, video or both.").

[81] *See* Comcast Corporation, Annual Report (Form 10-K), at 53 (Feb. 2, 2014) (showing Comcast derived $20.535 billion in revenue from its video segment in 2013—more than twice the revenue it earned from its high-speed Internet segment).

[82] Due to lack of scale, video programming is a loss leader even for the largest telephone companies, such as AT&T. *See The AT&T/DIRECTV Merger: The Impact on Competition and*

providers in the STB industry. These advantages make it difficult, today, to overbuild into Comcast's territory. The additional scale provided by TWC will make competing with Comcast all the more difficult and will extend Comcast's dominance into new territories.

A. Comcast's Ability to Lower Its Content Costs Will Further Immunize It from Competition in Both MVPD and Broadband

As the nation's largest MVPD, Comcast already enjoys a sizable comparative advantage over competing overbuilders in negotiating rights to programming. And the gap between what Comcast pays and what smaller overbuilders pay will unreasonably accelerate post transaction. Comcast's existing size makes it a formidable negotiator that has reportedly been able to achieve significant concessions from broadcasters and programmers—both on price and on the particular rights on the use of that programming. Its combination with TWC would make its bargaining power almost unfathomable. Currently, Comcast has more than 22.6 million video subscribers or about 22% of all existing MVPD subscribers. To that, Comcast's transactions with TWC and Charter will add another 7.2 million subscribers, and it will negotiate programming rights on behalf of an additional 2.1 million Bright House Networks subscribers for which TWC acquires programming and content today.[83] As a result, Comcast will be able to command the fate of almost 32% of all MVPD subscribers in negotiating with programmers and broadcasters.

Consumers in the Video Market and Beyond: Examining the Comcast-Time Warner Cable Merger And The Impact On Consumers: Hearing Before the S. Judiciary Comm., Subcomm. on Antitrust, Competition Policy and Consumer Rights, 113th Cong. 3 (June 24. 9, 2014) (statement of Randall Stephenson, Chairman, CEO, and President, AT&T, Inc.) *available at* http://www.judiciary.senate.gov/download/06-24-14-stephenson-testimony.

[83] TWC owns 66.67% of Time Warner Entertainment-Advance/Newhouse Partnership, which owns the licenses and authorizations of Bright House Networks. TWC provides various services to Bright House Networks, including "the opportunity to acquire equipment and third-party programming on a joint basis. . . ." Letter from Kathryn Zachem, Comcast, et al., to Marlene Dortch, FCC, MB Docket No. 14-57, at 10-11 (June 24, 2014).

Comcast's aggregate bargaining power tells only half the story. Obtaining rights to local broadcast programming and regional sports networks ("RSNs") is of significant importance for securing access to marquee sporting events—always coveted by subscribers. In gaining access to that programming, market power within the broadcast station's Designated Market Area ("DMA") or within a region significant to an RSN is key to bargaining power. Comcast will have both. Comcast's acquisition of TWC will give the merged firm more than a 50 percent share of the MVPD market in 27 DMAs, including:

- Seattle (62.5 percent);
- Boston (57.4 percent);
- San Francisco (55.7 percent);
- Philadelphia (54 percent);
- Denver (53 percent);
- Portland, Oregon (52.4 percent);
- Honolulu (90 percent);
- Rochester (75.7 percent);
- Albany (67.8 percent);
- Syracuse (67 percent);
- Binghamton, New York (63.5 percent);
- Portland, Maine (57.9 percent);
- Palm Springs, California (57.6 percent); and
- Beaumont, Texas (52.4 percent).[84]

---

[84] *See Examining the Comcast-Time Warner Cable Merger And The Impact On Consumers: Hearing Before the S. Judiciary Comm.*, 113th Cong. 3 (Apr. 9, 2014) (David Cohen, Executive Vice President, Comcast, written answers to questions for the record), *available at* http://www.judiciary.senate.gov/imo/media/doc/April%209,%202014%20-%20Cohen%20Responses.pdf. The market shares listed for Seattle, San Francisco, Portland, Oregon and Albany, New York do not include the Charter customers that Comcast will acquire as part of the exchange transaction. *See Update on TWC Acquisition, A Message from Brian Roberts and Neil Smit on the Time Warner Cable Transaction*, TeamComcast, at 2 ("Update on TWC Acquisition"), *available at* https://www.sec.gov/Archives/edgar/data/1166691/0000950103-14-002980-index.html; *see also Examining the Comcast-Time Warner Cable Merger And The Impact On Consumers: Hearing Before the S. Judiciary Comm.*, 113th Cong. 7 (May 1, 2014) (Arthur Minson, Executive Vice President and Chief Financial Officer, Time Warner Cable, written answers to questions for the record), *available at* http://www.judiciary.senate.gov/imo/media/doc/April%209,%202014%20-%20Minson%20Responses.pdf. The market share listed for Albany does not include the Charter

In addition, Comcast will operate post-divestiture, in 16 of the 20 largest Metropolitan Statistical Areas ("MSAs").[85]

Without access to the Video Programming Confidential Information currently subject to dispute at the D.C. Circuit, it is difficult to quantify the magnitude of the competitive harm that would result from the combination of Comcast and TWC. But certainly Comcast's increased market power will result in significant bargaining advantages and cost savings. Comcast itself has predicted that it expects to realize millions of dollars in operating expense efficiencies "from savings on programming costs over a three-year period, to the extent and at such time as more favorable rates and terms in some of Comcast's programming agreements supersede some of TWC's existing contracts."[86] And Comcast contends that, if it is able to obtain "slightly more favorable pricing or carriage terms from programmers relative to what Comcast and TWC each could do separately, this would *enhance* consumer welfare."[87]

But Comcast's gain will not benefit consumers. Despite the assumption of its economic experts that "'[b]asic economics teaches that changes in marginal cost will be passed on in full or

---

customers that Comcast will acquire as part of the exchange transaction. *See* Update on TWC Acquisition.

[85] Prior to the divestiture, Comcast is in 19 of the 20 largest MSAs and 19 of the 20 largest DMAs. Application at 142, 151. As a result of transferring its cable assets in Detroit and Minneapolis to SpinCo, its presence in the top 20 MSAs will be reduced to 17. *See* Letter from Kathryn Zachem, Comcast, and Steve Teplitz, Time Warner Cable, to Marlene Dortch, FCC, MB Docket No. 14-57, Attachment 3 (June 5, 2014). As a result of transferring its cable assets in Detroit and Minneapolis to SpinCo and its transfer of TWC's cable systems in Cleveland to Charter, its presence in the top 20 DMAs will be reduced to 16 markets. *Id.* Attachment 4.

[86] *See* Michael Angelakis, Angelakis Declaration, MB Docket No. 14-57, ¶ 7 (Apr. 7, 2014) ("Angelakis Declaration") (attached as Exhibit 4 to Application).

[87] Opposition at 163 (emphasis in original).

in part to consumers,'"[88] basic economic theory diverges from reality here. Comcast has made no commitments that any savings that the merged entity reaps from the transaction will be passed on to consumers in full or in part, and it is not clear that Comcast faces sufficient competition to ensure that it does. In fact, Comcast has publicly stated that any cost savings will not be passed on to consumers. Executive Vice President David Cohen admitted, "We're certainly not promising that consumer bills are going to go down or even increase less rapidly."[89]

In assessing competition that Comcast faces, it is overly simplistic to look at the market for MVPD services by itself. While rumors of cord-cutting and cord-shaving are rampant, consumers today overwhelmingly still prefer to purchase video and broadband services together. So while Comcast faces some market discipline on the fringes from video-only providers (such as satellite providers and OVDs), the core of its business (bundled video and broadband services) is rarely affected by a competitor that can match it with scale. As such, it is unlikely that competition will force Comcast to pass cost-savings from the transaction to residential consumers in order to retain them as customers.

Markets, like nature, abhor a vacuum. COMPTEL's members would love to fill that competitive void. Unfortunately, because purchasing programming is all about scale, video is often a loss-leader for small- and medium-sized firms—making video the price paid to provide

---

[88] *Id.* at 163-64 (citing Gregory Rosston and Michael Topper, An Economic Analysis of the Proposed Comcast Transactions with TWC and Charter in Response to Comments and Petitions, MB Docket No. 14-57, ¶ 70 (Sept. 20, 2014) (attached as Exhibit 2 to Opposition)).

[89] Jon Brodkin, *Comcast: No Promise that Prices "Will Go Down or Even Increase Less Rapidly,"* ArsTechnica (Feb. 13, 2014), http://arstechnica.com/tech-policy/2014/02/comcast-no-promise-that-prices-will-go-down-or-even-increase-less-rapidly/; *see also* Edward Wyatt, *As Services Expand, Cable Bills Keep Rising*, New York Times (Feb. 14, 2014), http://www.nytimes.com/2014/02/15/business/media/as-services-expand-cable-bills-keep-rising.html.

subscribers with other services, like broadband and voice. While these companies would prefer to make money off of all of their services, their ability to recoup costs from their subscribers is limited because the cost of programming has become so high that consumers are increasingly resistant to increases. As a result, consumers without alternatives may stay with a large cable company like Comcast—even if they do not prefer those services—simply because alternative offerings find it difficult to compete financially. Comcast's dominance over video must be checked in order to have any competition in broadband.

B. The Transaction Will Reduce Competition and Innovation for Streaming Devices and Set-Top Boxes

Comcast's increase in size post-merger would also have anti-competitive effects in yet another market—the one for set-top boxes ("STBs"). Large cable operators like Comcast not only reap significant cost savings compared to competing telephone companies and overbuilders when purchasing STBs, they also are able to dictate to manufacturers what those STBs will look like and what software and features those STBs will support. But the explosion of new hardware developed to support OVD and OTT content has promised a revolution in this area—potentially changing how consumers engage with video content and allowing operators to decide how and whether to leverage their cable video and complementary OVD services in new and innovative ways. But, like video programming, the development of innovative STBs is dependent upon gaining scale. Thus, for a variety of cable- and telco-ready devices to be available, this innovation revolution depends upon the willingness of large cable operators to open their linear and video on demand ("VOD") systems to these new manufacturers. TWC has a history of working with third-party device manufacturers in new and innovative ways that allow consumers more choice. The proposed merger will eliminate TWC as an alternative, innovative partner for third-party devices,[90] and as a result, it will likely eliminate these innovations by forcing a *de facto* standard—Comcast's X1 platform—upon the entire industry.

TWC has always been more willing than Comcast to engage with third-party platforms in ways that could provide consumers with new, innovative devices and technologies. For example, TWC has developed an app for both Roku and Fancast that allowed those STBs—designed primarily for OVD content—to access the full slate of TWC services (both linear and VOD), just as it would have been available on a TWC-leased STB. Comcast, by contrast, has been resistant to integrating its linear stream into third party STBs.

Comcast has been willing to provide only VOD and limited linear video access to second- and third-screen devices—like computers, tablets, and smart phones. Comcast has been less welcoming of products that connect to the television—blocking third-party devices from authenticating Comcast programming and generally refusing to provide those devices with access to Comcast's linear and VOD programming. The only third-party STB that Comcast appears to have engaged with regarding both its traditional linear and VOD services has been TiVo,[91] though this may well have been more about retaining TiVo's loyal customer base than any intent to expand the list of devices and video experiences available to consumers. The transaction thus will cut off an important means for alterative STBs to reach consumers—TWC's consumer-friendly policies.

---

[90] *Cf.* Amended Complaint, *United States v. AT&T Corp.*, No. 1:00-cv-01176 ¶ 34 (D.D.C. May 26, 2000), *available at* http://www.justice.gov/atr/cases/f4800/4840.htm ("By exploiting its 'gatekeeper' position in the residential broadband content market AT&T could make it less profitable for unaffiliated or disfavored content providers to invest in the creation of attractive broadband content, and thereby reduce the quantity and quality of content available.").

[91] *See* Jeff Baumgartner, *Comcast, TiVo Complete VOD Connection*, Multichannel News (July 9, 2014), http://www.multichannel.com/news/tv-apps/comcast-tivo-complete-vod-connection/375794.

Instead, Comcast appears poised to fight the spread of third-party platforms onto the television by pushing its X1 platform as a closed industry standard—to be licensed and controlled by Comcast. Comcast has invested millions of dollars so far on the development of its X1 platform,[92] giving Comcast a powerful incentive to push its subscribers toward Comcast's STB and walled-garden services and away from competing STBs and the OVDs they often support.

In its Opposition, Comcast seeks to allay concerns over its willingness and ability to control access to its services through third-party devices by pointing to its commitment to "make available to retail device manufacturers a non-CableCARD downloadable security solution for accessing Comcast's IP-based cable services."[93] The devil in that commitment is in the details, however, and Comcast has offered few.

While Comcast has agreed to work on a non-CableCARD solution, such a solution does not currently exist, and Comcast has made no commitment as to timing.[94] Comcast provides no information as to the terms on which it will provide this non-CableCARD solution, such as device testing or charges for access to particular services. Moreover, based on the draft Comcast-TiVo agreement that COMPTEL has thus far uncovered {{

---

[92] *See* Comcast Corporation, Quarterly Report (Form 10-Q), at 4 (Oct. 23, 2014) (reporting that capital expenditures for the first three quarters of 2014 increased by more than $600 million compared to the same period in 2013, and linking this growth "primarily . . . to increased spending . . . on customer premise equipment related to the deployment of our X1 platform and Cloud DVR technology. . .").

[93] Opposition at 188.

[94] The Commission is in the process of forming the Downloadable Security Technical Advisory Committee ("DSTAC"), which will seek "to promote the competitive availability of navigation devices (e.g., set-top boxes and MVPD-compatible television sets)." Public Notice, FCC Seeks Nominations for Membership for the Downloadable Security Technical Advisory Committee, DA 14-1762 (rel. Dec. 4, 2014). The DSTAC's mission is shaped by the STELA Reauthorization Act of 2014, H.R. 5728, 113th Cong., § 106 (2014) ("STELAR").

}} While Comcast also agrees to support CableCARD, the implementation of that technology has thus far not been a workable solution for third-party manufacturers, with the exception of TiVo, and such a solution is unquestionably incompatible with cutting-edge streaming device manufacturers, which are often smaller than the CableCARD itself.

Comcast's internal documents provide sufficient reason for pessimism as to whether Comcast will actually provide liberal access to its services to third-party devices. Comcast's internal documents suggest that the company remains committed to its own platform and chafes at the prospect of allowing consumers to experience content of any kind in a way that it does not control. {{

}}[95] {{

}}[96]

---

[95] Comcast Corporation, Responses to the Commission's Information and Data Request, MB Docket No. 14-57 (Oct. 14, 2014) ("Comcast Responses to Commission"), {{

}}

[96] {{ }}

Comcast has a vested interest in ensuring that this platform is successful, not only inside its own footprint, but outside it as well. Currently, Comcast's X1 platform lacks significant scale due to slow rollout and slow consumer uptake, meaning that, even if Comcast hits its goal of {{

}}.[97] {{

}} [98] Comcast has stated publicly that it plans to deploy X1 to TWC customers post-merger.[99] As a result of this transaction, Comcast and TWC will likely be joined by Cox,[100] Charter,[101] and SpinCo in deploying the X1 platform. These cable operators together will encompass some 76% of cable subscribers and 43% of MVPD subscribers in general.[102] But Comcast's ambitions go further. {{

---

[97] {{ }}

[98] Comcast Responses to Commission, {{ }}

[99] *See* David Cohen, *Comcast and Time Warner Cable File Applications and Public Interest Statement with FCC*, Comcast (Apr. 8, 2014), http://corporate.comcast.com/comcast-voices/comcast-and-time-warner-cable-file-applications-and-public-interest-statement-with-fcc ("On the video front, Comcast will bring our industry-leading X1, VOD, and online video options to TWC customers.").

[100] Joan E. Solsman, *Comcast to License X1 Platform to Cable Rival Cox*, CNET.com (Jan 28, 2014), http://www.cnet.com/news/comcast-to-license-its-x1-platform-to-cable-rival-cox.

[101] Steve Donohue, *Charter CEO Touts X1, ActiveVideo Cloud Guide Options*, InteractiveTV Today (Apr. 28, 2014), http://www.itvt.com/story/10128/charter-ceo-touts-x1-activevideo-cloud-guide-options.

[102] Annual Assessment for the Status of Competition in the Market for the Delivery of Video Programming, *Fifteenth Report*, 28 FCC Rcd 10496, 10557 Table 7 (2013) ("*Fifteenth Report*"). The *Fifteenth Report's* most recent data is from the end of June 2012. This analysis assumes that the "MVPD Total" of 101.0 million remained approximately the same from the end of 2011 to June 2012, where no data is available.

}}[103]

If all of those MVPDs were to adopt the X1, it is unclear whether there would then be sufficient scale left among competing cable operators for a competitive choice in STB platforms in the future. As Dr. Schmalensee explains, "the incentives for a third-party firm to invest in developing and enhancing set-top boxes are greater if they expect to have access to the subscribers of one or both of the merging parties. If the set-top box provider does not reach agreement with at least one of the two merging parties, there is a limited and fragmented amount of scale left among the remaining cable MVPDs."[104] As a result, it would be "significantly more complicated for the set-top box provider to attempt to combine scale from the remaining smaller cable MVPDs."[105] If not, competing MVPDs and OVDs may be forced into the unenviable position of negotiating with their competitor, Comcast, to license the X1, or to choose among options from an STB industry starved of scale.

The combined Comcast/TWC's dominance would result in Comcast's X1 platform becoming the *de facto* standard for software for set-top boxes. This dominance would reduce the innovation occurring currently in this space. Set-top box software is a relatively young field, with innovations in software for TV guides and applications occurring at a fast pace. The proposed transaction, by using the combined Comcast/TWC's large market share, would

---

[103] Comcast Responses to Commission, {{
}}

[104] Richard Schmalensee, Economic Analysis of the Impact of the Comcast/Time Warner Cable Transaction on Set-Top Box Competition and Video Programming Costs, MB Docket No. 14-57, ¶ 12 (Dec. 23, 2014) (attached here as Exhibit 2).

[105] *Id*. ¶ 14.

prematurely crown Comcast's X1 as the default standard in the market, and artificially stop the innovation of other software alternatives in its tracks.

IV. CLUSTERING

Comcast's acquisition of TWC and the 1.6 million Charter subscribers and the cable systems serving them will provide it with a far more concentrated presence in major metropolitan statistical areas, such as New York, Los Angeles, Boston, Atlanta, Dallas, and Houston, as well as in significant regional, geographic corridors in the Northeast, Texas, Southeast, and the Pacific Coast.[106] Comcast acknowledges that the transactions will provide it with a "near-national" presence in the MVPD and broadband markets and alleges that this "near-national" presence will allow it to compete more effectively.[107]

Comcast contends that the Commission "has repeatedly recognized the efficiencies and benefits to innovation and competition that contiguous regional service areas can produce," and dismisses as unsupported COMPTEL's argument that the expanded geographic reach and additional geographic clustering that the acquisition and exchange transactions will produce may create higher barriers to entry for overbuilders and other smaller competitors interested in offering a triple play alternative to those offered by Comcast and the incumbent local exchange carrier.[108] COMPTEL's argument is anything but unsupported. What the Commission has recognized is not that clustering in and of itself produces a public benefit (as Comcast would have it), but that clustering can have both procompetitive and anticompetitive effects.[109] The

---

[106] Letter from Francis Buono, Comcast, and Samuel Feder, Charter Communications, to Marlene Dortch, FCC, MB Docket No. 14-57, at 3, 5 (June 5, 2014).

[107] *Id.* at 12.

[108] Opposition at 109.

[109] *Adelphia Order*, 21 FCC Rcd. at 8318 ¶ 271.

anticompetitive effects that have been described both by the D.C. Circuit and the Commission are present in these transactions and must be weighed against any benefits Comcast alleges the transactions will produce.

The D.C. Circuit has astutely observed that "clustering and consolidation in the industry bolsters the market power of cable operators because 'a single geographic area can be highly susceptible to near-monopoly control by a cable company.'"[110] Similarly, the Commission has repeatedly observed that in many communities where cable MVPDs have clusters, "the market penetration of competitive MVPDs is much lower and cable market penetration is much higher than their nationwide penetration rates."[111] The Commission has also found that vertically integrated programmers such as Comcast have the ability to engage in anticompetitive conduct by favoring their affiliated cable operators over competitive MVPDs and that both an increase in clustering of cable systems and the emergence of new competitors in the video marketplace can increase the cable operator's incentive to withhold programming from rival MVPDs.[112] Finally, the Commission has found that vertical integration of the incumbent cable operator, the incumbent's economies of scale, the incumbent's first mover advantages, and the capital

---

[110] *Cablevision Systems Corporation v. FCC*, 649 F.3d 695, 712 (D.C. Cir. 2011); *see also Cablevision Systems Corporation v. FCC*, 597 F.3d 1306, 1309 (D.C. Cir. 2010).

[111] Implementation of the Cable Television Consumer Protection and Competition Act of 1992, *Report and Order and Notice of Proposed Rulemaking*, 22 FCC Rcd. 17791, 17830-31 ¶ 55 (2007) ("*Cable TV Consumer Protection and Competition Act Order*"), review denied *sub nom. Cablevision Systems Corporation v. FCC*, 597 F.3d 1306 (D.C. Cir. 2010). As of the end of 2012, the Commission confirmed that competitive MVPDs still had much lower penetration rates and cable companies much higher penetration rates than their national averages in communities where the cable MVPD was geographically clustered. Revision of the Commission's Program Access Rules, *Report and Order*, 27 FCC Rcd. 12605, 12617-18 ¶ 19 (2012) ("*Program Access Order*").

[112] *Cable TV Consumer Protection and Competition Act Order* 22 FCC Rcd. at 17810-11 ¶ 29, 17829 ¶ 53; *Program Access Order* 27 FCC Rcd. at 12642-43 ¶ 55.

intensive nature of network deployment can all serve as barriers to, and deter entry by, overbuilders and other small competitors.[113]

Ironically, in defense of the benefits of clustering, Comcast quotes language from the *Adelphia Order* approving the acquisition of the Adelphia cable systems and customers by Comcast and TWC where the Commission stated that clustering can "enable cable operators to offer an increased variety of broadband services at reduced prices to customers. . . ."[114] As Comcast itself concedes, however, its acquisition of TWC will not result in reduced prices to customers. In a press conference after the acquisition was announced, Comcast Executive Vice President David Cohen stated that, "[w]e're certainly not promising that customer bills are going to go down or even increase less rapidly."[115] While the $1.5 billion in operating expense efficiencies that Comcast expects to realize by the third year and the $1.5 billion in operating expense efficiencies it expects to realize each year thereafter[116] may reduce Comcast's costs, the cost efficiencies are not a cognizable benefit of the transactions because Comcast has failed to demonstrate that the savings will result in reduced prices or other benefits to consumers.[117]

---

[113] *See Fifteenth Report*, 28 FCC Rcd at10515 ¶ 38, 10519 ¶ 44, 10529-31 ¶ 68-73 (2013).

[114] Opposition at 30 & n.20.

[115] Brad Reed, *America's Broken Home Broadband Market Gets Perfectly Summed Up in One Quote*, BGR (Feb. 14, 2014), http://bgr.com/2014/02/14/comcast-time-warner-cable-price-increases/.

[116] Angelakis Declaration ¶¶ 6-7.

[117] *See Adelphia Order*, 21 FCC Rcd. at 8319 ¶ 273 ("If potential cost savings would only reduce the Applicants' costs and would not result in reduced prices or other benefits to consumers, than [sic] the alleged cost savings are not a cognizable benefit of the proposed transaction."); *see also id.* at 8319 ¶ 274 ("[W]hile more cost-effective advertising campaigns may financially benefit the Applicants by decreasing their costs, it is unclear whether they would result in a net increase in consumer surplus, which can be balanced against any anticompetitive effects of a transaction. What is important is the extent to which these lower costs can lead to lower prices, not whether they lead to lower cost structure for the Applicants.").

Comcast alleges that the increase in contiguous service areas resulting from the transactions will not increase its dominance in any markets because it "hardly can be considered dominant in any market it serves."[118] This is an interesting, but hardly credible, statement coming from a company that currently has more than a 50 percent share of the MVPD market in 12 Designated Market Areas, including Seattle, Boston, San Francisco, Philadelphia, Denver, and Portland, Oregon [119] and that proposes to acquire a company that currently has more than a 50 percent share of MVPD subscribers in 15 additional DMAs, including Honolulu; Rochester, Albany, Syracuse, and Binghamton, New York; Portland, Maine; Palm Springs, California; and Beaumont, Texas.[120] Post-exchange transaction, Comcast's market shares in Seattle, San Francisco, Portland, Oregon, and Albany, New York will climb even higher with the acquisition of the Charter customers.[121]

COMPTEL argued in its Petition to Deny that if the Commission were to grant the Applications (which it should not), it should take steps to mitigate the anticompetitive effects of the higher barriers to entry new entrants will face in the greatly expanded franchise areas served

---

[118] Opposition at 110.

[119] *See Examining the Comcast-Time Warner Cable Merger And The Impact On Consumers: Hearing Before the S. Judiciary Comm.* 113th Cong. 3 (Apr. 9, 2014) (David Cohen, Executive Vice President, Comcast, written answers to questions for the record), *available at* http://www.judiciary.senate.gov/imo/media/doc/April%209,%202014%20-%20Cohen%20Responses.pdf.

[120] *See Examining the Comcast-Time Warner Cable Merger And The Impact On Consumers: Hearing Before the S. Judiciary Comm.* 113th Cong. 7 (May. 1, 2014) (Arthur Minson, Executive Vice President and Chief Financial Officer, Time Warner Cable, written answers to questions for the record), *available at* http://www.judiciary.senate.gov/imo/media/doc/April%209,%202014%20-%20Minson%20Responses.pdf.

[121] *See* Update on TWC Acquisition at 2.

by Comcast.[122] Among those barriers to entry are those imposed on competitive applicants and franchisees by local franchising authorities ("LFAs"). Incumbent cable operators may demand that franchise agreements for new entrants contain the same requirements as the incumbents' agreements even though the new entrants are not receiving an exclusive right to provide service as the incumbents were. Alternatively, the Most Favored Nations ("MFN") provisions often contained in incumbent cable operator's franchise agreements allow the incumbent to opt-in to a new entrant's franchise agreement should the new agreement appear more favorable or less burdensome than the cable operator's existing agreement. Some MFN provisions allow the cable company to pick and choose from more favorable terms negotiated by a new entrant. LFAs, fearing either the loss of concessions they obtained from the incumbent or litigation by the incumbent if opt-in provisions are not honored, use MFNs as justifications and/or excuses to impose on new entrants the same terms and conditions that they imposed on the incumbent cable operator in exchange for an exclusive franchise.[123]

Extensive build out requirements are among the most onerous franchise requirements and can substantially delay, reduce or inhibit competitive entry by increasing financial burdens and risk.[124] The Commission has recognized the propensity of incumbent cable operators to engage in tactics to prevent or delay competitive entry.[125] CenturyLink provides concrete examples of

---

[122] *See* COMPTEL Petition at 42-45.

[123] *See* Implementation of Section 621(a)(1) of the Cable Communications Policy Act of 1984 as Amended by the Cable Television Consumer Protection and Competition Policy Act of 1992, *Report and Order and Further Notice of Proposed Rulemaking* 22 FCC Rcd. 5101, 5125 ¶ 48 (2007) ("*Section 621 Order*"), *aff'd sub nom Alliance for Community Media v. FCC*, 529 F. 3d 763 (6th Cir. 2008).

[124] *Id.* at 5121 ¶ 40.

[125] *Id.* at 5118 ¶ 34.

Comcast engaging in such tactics in communities where CenturyLink has applied for franchises.[126] CenturyLink attached to its comments two letters that Comcast sent to LFAs in June and July of this year regarding draft franchise agreements for CenturyLink to serve Centennial, Colorado and Parker, Colorado.[127] Although the D.C. Circuit has rejected a reading of Section 621 of the Cable Act[128] that authorizes LFAs to impose universal build out requirements on all cable operators,[129] Comcast urged the LFAs to hold CenturyLink to the same build out requirements contained in its own franchise agreements. In both letters, Comcast expressed the belief that the LFA "should have imposed on CenturyLink the same build out requirements contained in our franchise" and expressed the hope that the LFA "will adhere to its historic practice of requiring cable video providers to provide near-universal service throughout the entire community, through a binding, reasonable and enforceable build out obligation."[130]

To the extent the Commission allows Comcast to achieve a "near-national" presence in the MVPD and broadband markets through the proposed transactions, it must also do everything possible to alleviate the anticompetitive impacts such concentrated ownership may have on future competition in Comcast's markets by encouraging and promoting the availability of consumer choice and facilities-based service from competitive providers. At the very least, the

---

[126] CenturyLink, Inc., Comments, MB Docket No. 14-57, at 32-33 (Aug. 25, 2014) ("CenturyLink Comments").

[127] *Id.* Attachments A and B.

[128] 47 U.S.C. § 541.

[129] *Americable International, Inc. v. Department of Navy*, 129 F.3d 1271, 1275-76 (D.C. Cir. 1997); *see also Section 621 Order*, 22 FCC Rcd. at 5141-42 ¶¶ 84-86.

[130] CenturyLink Comments Attachment A at 3-4; *id.* Attachment B at 3-4. In the Section 621 proceeding, Comcast also argued that it was lawful and appropriate for LFAs to impose the same build out requirements on competitive applicants that apply to incumbents. *See Section 621 Order*, 22 FCC Rcd. at 5141 ¶ 83.

Commission should condition any approval of the transactions on Comcast's agreement not to engage in tactics to delay or prevent competitive entry in any community within its footprint, including by invoking MFN rights it, TWC or Charter may have in any franchise agreements for those communities.

CONCLUSION

For the foregoing reasons, and those stated in its Petition to Deny, COMPTEL respectfully requests that the Commission deny Comcast's application to acquire Time Warner Cable.

Respectfully submitted,

Mary C. Albert
COMPTEL
1200 G Street NW, Suite 350
Washington, DC 20005
(202) 296-6650
malbert@comptel.org

December 23, 2014

EXHIBIT 1:

COMCAST'S RESPONSES TO CALTEL'S FIRST SET OF DATA REQUESTS

Q-1:9. **Comcast's and Time Warner Cable's Response to NAAC Data Request #1, Question Q- 1:5, states in part that "the combined company will also be able to compete more effectively for medium-sized and enterprise business customers by combining Comcast Corporation's and Time Warner Cable's respective product offerings into a 'best of the best' service portfolio, thereby capitalizing on their complementary strengths and marketing expertise." Please explain if such product integration is also planned for wholesale services, and if so, how it will benefit wholesale customers.**

Objection:

Comcast objects to this request on the grounds that it seeks information that is neither relevant to the issues in this proceeding, nor reasonably calculated to lead to the discovery of relevant or admissible evidence. The company further objects on the grounds that the request exceeds the established scope of the proceeding.

Subject to the foregoing objections, Comcast responds as follows:

Response:

Comcast will extend and enhance the wholesale business arrangements that TWC has already established, but has not otherwise made any determinations regarding wholesale services or packages in California. In general, however, Comcast's merger with Time Warner Cable will result in increased business service and wireless backhaul competition resulting in lower prices and enhanced service offerings.

Sponsor: Terry Connell, Senior Vice President, Sales and Sales Operations

EXHIBIT 2:
DECLARATION OF
DR. RICHARD SCHMALENSEE

ECONOMIC ANALYSIS OF THE IMPACT OF THE COMCAST/TIME WARNER CABLE TRANSACTION ON SET-TOP BOX COMPETITION AND VIDEO PROGRAMMING COSTS

Richard Schmalensee

December 23, 2014

I. Introduction

1. My name is Richard Schmalensee. I am the Howard W. Johnson Professor of Economics and Management Emeritus at the Massachusetts Institute of Technology (MIT). I have taught at MIT since 1977, except for 1989-1991 when I was a member of the President's Council of Economic Advisers. I served as the John C Head III Dean of the MIT Sloan School of Management from July 1998 until I stepped down at the end of June 2007. I am also a Director at Global Economics Group, an economic consulting firm.

2. During my career, I have been author or co-author of 11 books and more than 120 articles on industrial organization and other areas of economics. I was the co-editor of Volumes I and II of the *Handbook of Industrial Organization*, a standard reference in the field, and I wrote the entry on Industrial Organization in the first edition of *The New Palgrave*, an authoritative encyclopedia of economics. I am the 2012 Distinguished Fellow of the Industrial Organization Society. I was the Editor-In-Chief of *Competition Policy International*, a leading journal for antitrust practitioners, from 2005 through 2008, and have been Chairman of its Editorial Board since then.

3. Over the years, both the U.S. Federal Trade Commission and the U.S. Department of Justice have asked me to consult on antitrust issues. For example, I was one of two economists outside the government with whom the Department of Justice consulted in preparing the *1992 Horizontal Merger Guidelines*. I have testified in U.S. federal courts and before Congress on numerous economic issues. My curriculum vitae is provided as Attachment 1.

4. Counsel for COMPTEL has asked me to review the proposed acquisition of Time Warner Cable by Comcast Corporation ("Transaction"). In this declaration, I focus on two main topics. First, I address the potential impact of this Transaction on competition for set-top

boxes that are used in the viewing of programming from multichannel video programming distributors ("MVPDs"). Second, I address the potential impact of this Transaction in increasing the advantage that Comcast and Time Warner Cable have in the cost of video programming over smaller MVPDs, including new entrants, which would decrease competition among MVPDs and among broadband providers.

5. I find that there are competitive concerns with respect to both issues. First, the Transaction may restrict the access of third-party set-top box providers to Comcast and Time Warner Cable's customers and thereby reduce competition in set-top boxes, resulting in decreased innovation in set-top boxes. The Transaction may also allow Comcast to reduce the access of third-parties content providers, such as online-video distributors ("OVDs"), to placement on set-top boxes using the X1 platform controlled by Comcast, which could become a de facto standard. Second, the Transaction may increase the gap between what Comcast and Time Warner Cable pay for video programming versus what smaller MVPDs pay, thereby leading to decreased competition among MVPDs and among broadband providers in ways that, on net, harm MVPD and broadband consumers.

6. For the reasons I set out below I would encourage the Federal Communications Commission staff to investigate these issues carefully. I reserve the right to supplement this declaration. In particular, as of this submission I have only started my review of the millions of documents, adding up to roughly three terabytes of data, provided by the merging parties only recently. Assuming that access to video programming confidential information ("VPCI") is permitted under a protective order, I also expect to undertake a review of the VPCI.

II. Set-Top Box Competition

A. Background

7. Consumers use set-top boxes to access video programming from MVPDs. Historically, the only significant function of set-top boxes was to allow consumers to watch linear programming on their televisions. In recent years, with developments in technology, MVPD set-top boxes can be used to record and playback linear programming, to access video-on-demand ("VOD"), to access Internet content including programming from OVDs, to play video games and to access or provide other functionality.

8. MVPDs commonly provide set-top boxes to their subscribers for a monthly fee or as part of a bundle of video programming services. The two leading manufacturers of set-top box hardware are Arris (formerly Motorola) and Cisco (formerly Scientific Atlanta). Recent efforts to provide greater functionality have taken place at the user interface (software) level. Some MVPDs have developed their own software, such as Comcast with its X1 platform. MVPDs also use software from third-party firms, such as Rovi's Passport Guide.

9. Third-party firms also develop and sell set-top boxes, which may be used for viewing MVPD content and/or other content such as from OVDs. The main barrier to third-party set-top boxes providing access to MVPD content is that the MVPD has to authorize such access. CableCARDs currently allow third-party set-top boxes, such as TiVo set-top boxes, to access a cable MVPD's linear programming.[1] My understanding is that MVPDs have been required by

---

[1] Comcast agreed to allow TiVo access to its VOD programming as part of a successor agreement to an initial agreement between those parties that contemplated Comcast using TiVo software on its set-top boxes and that provided a covenant by TiVo not to assert its DVR patents against Comcast. *See* TiVo, Inc., 2009 Annual Report (Form 10-K), at 85-86 (Mar. 31, 2010); *see generally* TiVo, Inc., (Form 8-K) (May 9, 2011). TiVo has filed patent infringement suits against other MVPDs and set-top box manufacturers, including Time Warner

the FCC in the past to provide subscribers with CableCARDs they can use in third-party set-top boxes to enable those boxes to access the MVPD's linear programming, but that there is at least some uncertainty regarding this requirement following the *EchoStar* decision.[2] My understanding is that the next generation of set-top boxes are likely to abandon the use of CableCARDs in favor of software-based solutions. Such schemes are already starting to be implemented.[3]

10. Other set-top boxes do not currently provide access to MVPD linear or VOD content.[4] For example, the Apple TV allows consumers to access a range of over-the-top video programming from providers including Apple, Netflix, Hulu, HBO, Major League Baseball, Disney Channel, ABC, and many other sources. There are currently 50 such "channels" offered on the Apple TV.[5] In some cases, such as for ABC and HBO, a consumer needs to have a subscription for that channel from an MVPD in order to have access to that channel on the Apple TV. The Apple TV also provides a range of other functionality, such as streaming audiovisual content in the home and being able to display content from an iPad or iPhone.

Cable, and received settlements totaling nearly $1.5 billion. *See* TiVo Inc., 2013 Annual Report (Form 10-K), at 12 (Mar. 14, 2014).

[2] *EchoStar Satellite v. FCC*, 704 F.3d 992 (D.C. Cir. 2013).

[3] The STELA Reauthorization Act of 2014 provided for the sunsetting of the integration ban that prohibited cable MVPDs from integrating decryption technology into set-top boxes and provided for a Downloadable Security Technical Advisory Committee ("DSTAC") to "to identify, report, and recommend performance objectives, technical capabilities, and technical standards of a not unduly burdensome, uniform, and technology- and platform-neutral software-based downloadable security system" to promote the competitive availability of navigation devices (e.g., set-top boxes and MVPD-compatible television sets) in furtherance of Section 629 of the Communications Act." STELA Reauthorization Act of 2014, H.R. 5728, 113th Cong., § 106 (2014) ("STELAR"). The FCC is in the process of establishing DSTAC. *See* Public Notice, FCC Seeks Nominations for Membership for the Downloadable Security Technical Advisory Committee, DA 14-1762 (rel. Dec. 4, 2014).

[4] As I discuss below, some of these set-top boxes that are starting to provide access to MVPD linear and VOD content with the cooperation of MVPDs.

[5] *See What's on Apple TV*, Apple, https://www.apple.com/appletv/whats-on/ (last visited Dec. 23, 2014).

11. Other firms selling set-top boxes or devices include Roku, Google, Amazon, Fan TV, Microsoft, and Sony. In some cases, the set-top box functionality is integrated into a television, as with Samsung's Smart TVs. These set-top boxes are starting to include access to MVPD content. As noted, such access is subject to the control of the MVPD, as MVPDs are not currently required to provide any access other than via CableCARD (subject to the resolution of the impact of the *EchoStar* decision), which provides access only to linear programming and is not expected to be an important access scheme in the future. Getting full-featured access to an MVPD's content, including VOD, requires approval by the MVPD. As I note below, Time Warner Cable has been a leader in allowing full-featured access by these third-party set-top boxes. Time Warner Cable subscribers are able to view Time Warner Cable linear and VOD content on Roku devices, Xbox 360s, Samsung Smart TVs and Fan TV boxes.[6]

B. Potential Impact of Transaction on Set-Top Box Competition

12. Comcast and Time Warner Cable are, by far, the two leading cable MVPDs, with approximately 40 percent and 21 percent respectively of all U.S. cable MVPD subscribers. They are two available anchor tenants for a set-top box platform. The remaining cable MVPDs account for about 39 percent, with the next largest system at about 8 percent. Given the significant fixed costs involved, the incentives for a third-party firm to invest in developing and enhancing set-top boxes are greater if they expect to have access to the subscribers of one or both of the merging parties.[7] If the set-top box provider does not reach agreement with at least

---

[6] Time Warner Cable offers up to 300 live linear channels as well as VOD access on these devices. *See TWC TV* App, Time Warner Cable, http://www.timewarnercable.com/en/tv/features/twc-tv.html (follow "Options in Your Home") (explaining that the services are available on "Computer, iPad, Xbox, Kindle Fire HD & HDX, Android, Samsung Smart TV, iPhone, Roku, [and] Fan TV.").

[7] I use "set-top box" here to include the entirety of the set-top box including the software user interface.

one of the two merging parties, there is a limited and fragmented amount of scale left among the remaining cable MVPDs.

13. There are at least two potential significant consequences of the Transaction for set-top box competition. First, the Transaction reduces the number of large, marquee partners for third-party set-top box providers from two to one. If a set-top box provider does not expect to gain access to that merged entity's subscribers, that limits its incentive to invest in developing a set-top box that integrates MVPD programming. Moreover, it prevents the possibility of the two marquee players aligning themselves with different set-top box platform, which would thereby provide for less dynamic competition in this area.

14. It would be significantly more complicated for the set-top box provider to attempt to combine scale from the remaining smaller cable MVPDs. Moreover, if it did not expect to have access to the subscribers of the merged entity then it would not have access to 61 percent of all cable subscribers.[8] By contrast, if in the absence of the merger, a set-top box provider reached a deal with either Comcast or Time Warner Cable, it might be able to use the success of the product to attract the other firm, as well as attract smaller cable MVPDs.

15. The second potential impact of the Transaction arises if Time Warner Cable is significantly more receptive to set-top box innovation by third-parties than Comcast. If so, then given that merged entity would be the only large cable MVPD post-Transaction, the Transaction eliminates the only large cable MVPD that is likely to facilitate set-top box

[8] Direct-broadcast satellite ("DBS") and telco MVPD subscribers also use set-top boxes to view content. DBS providers are likely less desirable partners for third-party set-top boxes because DBS providers do not control wired broadband access and because many DBS subscribers have slower DSL service for broadband. The telco MVPD providers are also less attractive partners as they have significantly smaller numbers of subscribers than Comcast and Time Warner Cable and, in the case of AT&T, transmit video using IPTV. This is not to say that they could not play a role in set-top box development, but they are significantly less attractive alternatives.

competition and innovation. While my review of the documents produced by the Comcast and Time Warner Cable is at only a preliminary stage, the available information at this time suggests that this is a plausible concern.[9]

16. Comcast has developed its own X1 platform. The X1 set-top box that Comcast subscribers can use to access Comcast content provides for enhanced features such as advanced search and integration with a voice control smartphone app.[10] The X1 platform is a central part of Comcast's competitive strategy going forward. My understanding is that Comcast plans on offering its X1 platform to other cable MVPDs and already has a trial agreement with Cox. Comcast has also stated that it intends to use X1 in the former Time Warner Cable footprint if the Transaction is approved.

17. By contrast, Time Warner Cable has not made the same type of investments in a proprietary set-top box platform. As a result, Time Warner Cable is likely to be significantly more receptive to working with third-party set-top box manufacturers/developers. Indeed, in terms of currently available set-top boxes using non-CableCARD solutions for enabling access, Time Warner Cable allows its linear and VOD programming to be accessed on Roku devices, Xbox 360, Samsung Smart TVs and Fan TV boxes while Comcast does not provide similar access.[11]

---

[9] My understanding is that a substantial amount of document production, amounting to millions of pages, was made available only on or about December 10, 2014 and that the documents produced include relevant documents on set-top boxes.

[10] See Comcast, "The X1 Platform by Xfinity," http://www.comcast.com/x1clouduser.

[11] Time Warner Cable offers up to 300 live linear channels as well as VOD access on these devices. *See TWC TV* App, Time Warner Cable, http://www.timewarnercable.com/en/tv/features/twc-tv.html (follow "Options in Your Home") (explaining that the services is available on "Computer, iPad, Xbox, Kindle Fire HD & HDX, Android, Samsung Smart TV, iPhone, Roku, [and] Fan TV."). Comcast allows access to VOD, but not linear programming, on the Xbox 360. *See FAQs: Xbos 360*, Comcast Xfinity, http://xbox.comcast.net/faqs.html ("We do not have plans to deliver live, linear channels on the Xbox 360 at this time."). The other devices listed in the

18. More generally, it appears that Time Warner Cable has been more interested in consumer owned and managed ("COAM") devices as a matter of company strategy than Comcast has. A Time Warner Cable {{

{{

}}

19. Given Comcast's significant investment in its X1 platform, Comcast would be expected to encourage its subscribers to engage with the X1 platform rather than third-party STBs. {{

---

text cannot be used to access Comcast's linear or VOD programming. *See Xfinity TV Go App with Download Feature Frequently Asked Questions*, Comcast Xfinity, http://customer.comcast.com/help-and-support/xfinity-apps/xtv-go-app-download-feature-faqs (listing compatible devices, which are limited to iPhone, iPod Touch, iPad, Android smartphones or tables, and Kindle Fire products).

In Comcast's recent responses to the FCC's questions on this issue, Comcast noted that it had made its app that allows access to certain Comcast content available on a variety of smartphones and tablets (as has Time Warner Cable). None of the devices were set-top boxes. Comcast noted that it was in discussion with {{ }} to support its apps on those platforms and that Comcast believed {{ }} *See* Letter from Kathryn Zachem, Comcast Corporation, to Marlene Dortch, FCC, MB Docket No. 14-57, Response to Question 4 at 2-3 (Nov. 26, 2014). It is also worth noting that Comcast reports that makes available "more than 60" linear channels in contrast to up to 300 from Time Warner Cable. *Id.* at 2.

[12] Time Warner Cable, Inc., Responses to the Commission's Information and Data Request, MB Docket No. 14-57 (Oct. 14, 2014) ("Time Warner Cable Responses to Commission") {{

}}

}}[13]

20. The Transaction therefore not only reduces the number of potential large cable MVPD partners for a set-top box competitor from two to one, but the one partner that is being removed by the transaction is the one that has been significantly more interested in partnering with set-top box providers.

C. Potential Impact of Loss of Set-Top Box Competition

21. The immediate impact of the possible loss of set-top box competition is that consumers face reduced and/or slower innovation by third-party set-top box providers. As I noted above, Comcast plans to use its X1 platform in the former Time Warner Cable territories if the Transaction is approved. Comcast also plans to attract other cable MVPDs to use the X1 platform and set-top box and is in a trial with Cox. Comcast, Time Warner Cable and Cox would account for about 69 percent of all cable MVPD subscribers. The transaction would greatly increase the scale on the X1 platform thereby limiting the scale available to other set-top box competitors.

22. Post-Transaction, Comcast would exercise greater control over the ability of other set-top box platforms to succeed. Comcast could choose not to cooperate with such platforms, which would greatly limit their chances of developing a commercially viable product. If Comcast did cooperate, it could extract terms and conditions to serve its interests, such as, for example by disadvantaging OVDs in terms of access to the set-top box. This could result in harm not only in innovation in set-top boxes, but also more broadly to competition from OVDs

[13] Time Warner Cable Responses to Commission, {{
}}

in the distribution of video to consumers. In the long-run, OVDs could develop to the point that a broadband provider would not need to also offer MVPD services, which would increase the likelihood of broadband entry by overbuilders in Comcast's territory. Limiting the ability of OVDs to compete through control of the set-top box would therefore decrease the likelihood of broadband entry in the long run.

23. If Comcast chooses to limit cooperation with third-party set-top boxes, its X1 platform may become the de facto standard for cable set-top boxes given the reduced incentives for third-party providers to innovate.[14] Comcast would then exercise significant control over the functionality of set-top boxes in the future. It could limit access of other firms, OVDs or other edge providers, to the X1 platform, or extract terms and conditions that serve Comcast's interests.

24. Comcast has, of course, innovated, just as the old AT&T brought out new telephones from time to time when it was the only supplier of them to most of the nation. When AT&T's legal monopoly on telephones was ended, however, the pace of innovation increased dramatically. A multitude of competing, innovative firms introduced high-quality telephones with a variety of new features at what seemed to be amazingly low prices. The moral of this story and others like it is that competition in innovation, as in production and distribution, is

[14] Comcast has stated that it has commited to making available a non-cableCARD authentication method for accessing its linear and VOD content. *See* Letter from Jordan Goldstein, Comcast, and Matthew Zinn, TiVo, to Marlene Dortch, FCC, CS Docket. No. 97-80, MB Docket No. 10-91, at 1 (July 14, 2014). Whether this authentication method is made available quickly, whether the solution is technically satisfactory to third-party set-top box providers, and whether Comcast's licensing terms and conditions are reasonable remains to be seen. Given that Time Warner Cable has already made its linear and VOD content available on third-party set-top boxes, it is questionable whether Comcast's commitment to provide a means of doing so in the future is a satisfactory replacement for the potential loss of Time Warner Cable's demonstrated willingness to do so in the present.

generally an important and powerful source of consumer benefits—particularly in consumer electronics.

III. Programming Costs

25. The second issue I discuss in this declaration is the potential impact of this Transaction in increasing the advantage that Comcast and Time Warner Cable now have with respect to the acquisition of video programming over smaller MVPDs, including new entrants. Assuming that access to VPCI is permitted under a protective order, I expect to undertake a review of the VPCI.

26. My understanding from talking to industry participants is that it is a widespread belief that the largest MVPDs, such as Comcast and Time Warner Cable, pay significantly less than smaller MVPDs do for video programming. Comcast also acknowledges that it expects significant cost savings from transitioning from the rates paid by Time Warner Cable to those paid by Comcast.[15] The fact that Comcast now pays lower rates than Time Warner Cable suggests that the merged firm would pay even lower rates than Comcast alone does now.

[15] Dr. Israel argues that the savings in programming costs expected from the Transaction "are quite small in total, amounting to only {{ }} per year." Mark A. Israel, Economic Analysis of the Effect of the Comcast-TWC Transaction on Broadband: Reply to Commenters, MB Docket No. 14-57, ¶ 158 (Sept. 22, 2014) (attached as Exhibit 1 to Comcast Corporation and Time Warner Cable Inc., Opposition to Petitions to Deny and Response to Comments, MB Docket No. 14-57 (Sept. 23, 2014)). Without access to the underlying contracts in the VPCI it is difficult to assess this claim. In particular, the savings over the longer run may be significantly greater when all of Time Warner Cable's contracts have expired. The declaration cited by Dr. Israel for this estimate noted that Comcast expected the savings "to the extent and at such time as more favorable rates and terms of some of Comcast's programming agreements supersede some of TWC's existing contracts." *See* Michael J. Angelakis, Angelakis Declaration, MB Docket No. 14-57, ¶ 7 (Apr. 7, 2014) (attached as Exhibit 4 to Applications of Comcast Corp. and Time Warner Cable Inc. for Consent to Transfer Control of Licenses and Authorizations, Applications and Public Interest Statement, MB Docket No. 14-57 (Apr. 8, 2014)). Even taking the {{ }} a year as a lower bound, the savings are significant. As a rough estimate, the {{ }} is about {{ }} of Time Warner Cable's video programming costs of revenue in 2013 reported. *See* Time Warner Cable Inc., 2013 Annual Report (Form 10-K), at 42 (Feb. 18, 2014). It is also important to note that based on the description of Comcast's estimate, it does not appear that further decreases in the rates that Comcast pays for programming as a result of the Transaction, relative to what it would pay in the absence of the Transaction, are included in the analysis.

27. If the Transaction increases the differential between Comcast and Time Warner Cable's video programming costs and those of smaller MVPDs, it will decrease competition among MVPDs. The attractiveness of overbuilder entry and expansion will decrease if the disadvantage they face in terms of costs of programming increases. This will also decrease competition among broadband providers.

28. My understanding is that broadband providers believe they need to offer MVPD services in addition to broadband to be competitive. Offering bundled broadband and video packages is important to persuading consumers to switch. Entry as a broadband provider is already complicated and expensive. A further increase in the cost disadvantage in video programming faced by smaller broadband providers would decrease the profitability of entry and thereby decrease the likelihood of broadband entry and expansion.

29. In much of the country, there is limited broadband competition at the moment. If the Transaction inhibits broadband entry, that would impose harm on consumers. For example, Google Fiber's entry or planned entry in selected locations appears to have resulted in significant competitive responses from incumbents.

30. {{

}}[16] {{

[16] Time Warner Cable Responses to Commission, {{
}}

}}[17] {{

}}[18] The type of benefits that consumers received from higher quality and lower prices in these regions would be lost if broadband entry were reduced.

[17] *Id.*

[18] *Id.*

*   *   *

The foregoing declaration has been prepared using facts of which I have personal knowledge or based upon information provided to me. I declare under penalty of perjury that the foregoing is true and correct to the best of my information, knowledge, and belief.

Executed on December 23, 2014.

Richard Schmalensee
Director
Global Economics Group

ATTACHMENT A:
CURRICULUM VITAE OF
DR. RICHARD SCHMALENSEE

REDACTED – FOR PUBLIC INSPECTION

CURRICULUM VITAE

Richard Schmalensee

Howard W. Johnson Professor of Economics and Management, Emeritus
Dean Emeritus, Sloan School of Management
Massachusetts Institute of Technology

MIT Room E62-525
100 Main Street
Cambridge, MA 02142-1347
(617) 253-2957, fax: 258-6786
email: rschmal@mit.edu

172 Beacon Street, Unit 4
Boston, Massachusetts 02116
(617) 247-0029, fax: -0038

EDUCATION:

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
S.B., Economics, Politics and Science, 1965
Ph.D., Economics, 1970

EMPLOYMENT:

	MASSACHUSETTS INSTITUTE OF TECHNOLOGY
2007-12	Howard W. Johnson Professor of Economics and Management
2001-07	John C Head III Dean, MIT Sloan School of Management
1998-00	Dean, MIT Sloan School of Management (Interim, July-October 1998)
1996-98	Deputy Dean, MIT Sloan School of Management
1991-99, 2008-12	Director, MIT Center for Energy and Environmental Policy Research
1988-99	Gordon Y Billard Professor of Economics and Management
1986- 12	Professor, Department of Economics
1979- 12	Professor, MIT Sloan School of Management
1977-79	Associate Professor, MIT Sloan School of Management
1970	Assistant Professor, MIT Sloan School of Management (Spring)
1967-69	Instructor, MIT Sloan School of Management
	PRESIDENT'S COUNCIL OF ECONOMIC ADVISERS
1989-91	Member
1967	Junior Staff Economist (Summer)
	UNIVERSITY OF CALIFORNIA, SAN DIEGO
1974-77	Associate Professor, Department of Economics
1970-74	Assistant Professor, Department of Economics

VISITING APPOINTMENTS:

2008	Executive in Residence, Rady School of Management; U. of California, San Diego (Winter)
2007	Distinguished Visiting Scholar, Tuck School of Business, Dartmouth College (Fall)

1985-86	Visiting Professor, Harvard Business School
1985	Visiting Professor, CORE, University of Louvain, Belgium (Spring)
1980-81	Visiting Scholar, Department of Economics, Harvard University
1973-74	Visiting Associate Professor and Research Fellow, Department of Economics, University of Louvain, Belgium

EDITORIAL SERVICE:

Editor in Chief, 2005-08; Chairman, Editorial Board, 2008-: *Competition Policy International*
Editorial Board: *Journal of Economics and Management Strategy*, 1992-98
Associate Editor: *Journal of Economic Perspectives*, 1992-98
Associate Editor: *International Journal of Industrial Organization*, 1982-89
Board of Editors: *American Economic Review*, 1982-86
Founding Editor, 1978-89; Co-Editor, 1989-: MIT Press Series, *Regulation of Economic Activity*
Associate Editor, 1977-81; Board of Editors, 1981-89: *Journal of Industrial Economics*

PROFESSIONAL ASSOCIATIONS:

American Economic Association: Committee on Government Relations, 2009-12; Executive Committee, 1993-95; Budget Committee, 1993-95; Nominating Committee, 1987; Advisory Committee on Meetings Program, 1986, 1989, 1994
Econometric Society: Chair, Local Arrangements Committee, 1985 World Congress; Chair, Program Committee, 1980 North American Fall Meeting; Program Committee, 1980 World Congress
Second World Congress of Environmental Economists, Program Committee, 2002

CONSULTATION AND GOVERNMENT SERVICE (SELECTED):

Global Economics Group, Director, 2011-
National Climate Assessment Development & Advisory Committee, 2011-
LECG, LLC: Director, 2004-2011
National Academies/National Research Council: Panel on Transportation and a Sustainable Environment, 1994-97; Committee on National Statistics, 1998-2001; Panel on Cost-of-Living Indexes, 1999-2001; Coordinating Committee on the Transition to Sustainability, 2000-2001; Committee on America's Climate Choices, 2008-2011; Committee for a Study of Freight Rail Transportation and Regulation (Chair), 2014-
U.S. Environmental Protection Agency: Environmental Economics Advisory Committee, 1992-96, 1998; Clean Air Act Compliance Analysis Council, 1992-98, Chairman 1992-96
Antitrust Division, U.S. Department of Justice, consultant, 1991-92 (1992 Merger Guidelines)
NERA Economic Consulting: Special Consultant 1981-89, 1991-2004
Bureau of Economics, U.S. Federal Trade Commission: consultant, 1972-81 (Antitrust Policy)

AWARDS AND OTHER PROFESSIONAL ACTIVITIES (SELECTED):

Associate Scholar, Harvard Environmental Economics Program, 2013-
Chicago Booth IGM Economic Experts Panel, 2012-
Distinguished Fellow, Industrial Organization Society, 2012
John Kuszczek Memorial Lecture, Bank of Canada, 2011
Energy Board Member, Bipartisan Policy Center, 2011-13

Stackelberg Lecture, University of Milan, Bicocca, 2010
Keynote Speaker, World Congress of Environmental and Resource Economists, 2010
Master Class, Rafael del Pino Foundation, Madrid, 2009
Carpenter Lecture, Babson College, 2008
J.-J. Laffont Lecture, CRESSE Summer School, Greece, 2008
Member, National Commission on Energy Policy, 2006-2010
European Investment Bank Lecture, European University Institute, Florence, 2002
Fathauer Lecture in Political Economy, University of Arizona, 2000
Member: International Academy of Management, 1998-
Fellow: American Academy of Arts and Sciences, 1995-
Edward A. Hewett Prize, American Association for the Advancement of Slavic Studies (with P.L. Joskow and N. Tsukanova), 1995
Revista de Análisis Económico Lecture, Econometric Society Latin American Meeting, 1994
Research Associate: National Bureau of Economic Research, 1992-2013
Director: Long Island Lighting Company, 1992-98; MIT Press, 1994-2007; International Securities Exchange, 2000-2009; MFS Investment Management, 2002-04; International Data Group, 2004-; Resources for the Future, 2009- (Chairman, 2014-); National Bureau of Economic Research, 2013-
Donald Gilbert Memorial Lecture, University of Rochester, 1992
American Council for Capital Formation Center for Policy Research: Board of Directors, 1991-2010; Environmental Policy Fellow, 1997-98
Fellow, Econometric Society, 1982-
Invited Speaker, Econometric Society World Congress, 1980

BOOKS WRITTEN:

The Economics of Advertising (Vol. 80, Contributions to Economic Analysis), Amsterdam: North-Holland, 1972.

Applied Microeconomics: Problems in Estimation, Forecasting and Decision-Making, San Francisco: Holden-Day, 1973.

An Introduction to Applied Macroeconomics (with E. Kuh), Amsterdam: North-Holland, 1973. Japanese edition, 1975.

The Control of Natural Monopolies, Lexington: D.C. Heath (Lexington Books), 1979.

Markets for Power: An Analysis of Electric Utility Deregulation (with P. L. Joskow), Cambridge: MIT Press, 1983.

Economics, 2nd Ed. (with S. Fischer and R. Dornbusch), New York: McGraw-Hill, 1988. Multiple foreign language editions.

Paying with Plastic: The Digital Revolution in Buying and Borrowing (with D.S. Evans), Cambridge: MIT Press, 1999. Second edition, 2005; Korean Edition, 2011.

Markets for Clean Air: The U.S. Acid Rain Program (with A.D. Ellerman, P.L. Joskow, J.P. Montero, and E.M. Bailey), Cambridge: Cambridge University Press, 2000.

Did Microsoft Harm Consumers? Two Opposing Views (with D.S. Evans; F.M. Fisher and D.L. Rubinfeld), Washington: AEI Press, 2000.

Invisible Engines: How Software Platforms Drive Innovation and Create Value (with D.S. Evans and A. Hagiu), Cambridge: MIT Press, 2006. Chinese edition, 2010.

Catalyst Code (with D.S. Evans), Boston: Harvard Business School Press, 2007. Korean edition, 2008; Polish edition, 2010.

The Future of the Electric Grid (with J.G. Kassakian and others), Cambridge: MIT Energy Initiative, 2011.

BOOKS EDITED:

The Empirical Renaissance in Industrial Economics (ed., with T. F. Bresnahan), Oxford: Basil Blackwell, 1987.

Handbook of Industrial Organization, Vols. I & II (ed., with R. D. Willig), Amsterdam: North-Holland, 1989.

Management: Inventing and Delivering Its Future (ed., with T.A. Kochan), Cambridge: MIT Press, 2003. Chinese and Korean editions, 2004.

Harnessing Renewable Energy in Electric Power Systems (ed., with B. Moselle and J. Padilla), Washington/London: RFF Press, 2010.

The Causes and Effects of Deregulation, 2 Vols. (ed., with P.W. MacAvoy), Cheltenham, UK: Edward Elgar, 2014

JOURNAL ARTICLES:

"Regulation and the Durability of Goods." *Bell Journal of Economics and Management Science*, 1 (Spring 1970): 54-64.

"Consumer's Surplus and Producer's Goods." *American Economic Review*, 61 (September 1971): 682-687.

"A Note on Monopolistic Competition and Excess Capacity." *Journal of Political Economy*, 80 (May/June 1972): 586-591.

"Option Demand and Consumer's Surplus: Valuing Price Changes Under Uncertainty." *American Economic Review*, 62 (December 1972): 813-824.

"A Note on the Theory of Vertical Integration." *Journal of Political Economy*, 81 (March/April 1973): 442-449.

"Brand Loyalty and Barriers to Entry." *Southern Economic Journal*, 40 (April 1974): 579-588.

"Market Structure, Durability, and Maintenance Effort." *Review of Economic Studies*, 41 (April 1974): 277-287.

"Estimating the Costs and Benefits of Utility Regulation." *Quarterly Review of Economics and Business*, 14 (Summer 1974): 51-64.

"Consumer Behavior versus Economic Theory." *Recherches Economiques de Louvain*, 40 (September 1974): 261-276.

"Alternative Models of Bandit Selection." *Journal of Economic Theory*, 10 (June 1975): 333-342.

"An Experimental Study of Expectation Formation." *Econometrica*, 44 (January 1976): 17-41.

"Another Look at the Social Valuation of Input Price Changes." *American Economic Review*, 66 (March 1976): 239-243.

"Resource Exploitation Theory and the Behavior of the Oil Cartel." *European Economic Review*, 7 (April 1976): 257-279.

"Advertising and Profitability: Further Implications of the Null Hypothesis." *Journal of Industrial Economics*, 25 (September 1976): 45-54.

"A Model of Promotional Competition in Oligopoly." *Review of Economic Studies*, 43 (October 1976): 493-507.

"Is More Competition Necessarily Good?" *Industrial Organization Review*, 4 (1976): 120-121.

"Public Investment Criteria, Insurance Markets, and Income Taxes." *Journal of Public Economics*, 6 (November 1976): 425-445.

"Valuing Changes in Regulated Firms' Input Prices." *Southern Economic Journal*, 43 (January 1977): 1346-1351.

"Using the H Index of Concentration with Published Data." *Review of Economics and Statistics*, 59 (May 1977): 186-193.

"Comparative Static Properties of Regulated Airline Oligopolies." *Bell Journal of Economics*, 8 (Autumn 1977): 565-576.

"Nonconvexity and Optimal Exhaustion of Renewable Resources" (with T. R. Lewis). *International Economic Review*, 18 (October 1977): 535-552.

"Common Stock Volatility Expectations Implied by Option Premia" (with R. R. Trippi). *Journal of Finance*, 33 (March 1978): 129-147.

"A Note on Economies of Scale and Natural Monopoly in the Distribution of Public Utility Services." *Bell Journal of Economics*, 9 (Spring 1978): 270-276.

"A Model of Advertising and Product Quality." *Journal of Political Economy*, 87 (June 1978): 485-504.

"Life-Cycle Costing for Consumers of Energy-Conserving Devices" (with S. S. Penner and M. R. Brambley). *Energy*, 3 (July/August 1978): 415-419.

"Entry Deterrence in the Ready-to-Eat Breakfast Cereal Industry." *Bell Journal of Economics*, 9 (Autumn 1978): 305-327. Reprinted in *Market Strategy and Structure* (J.M.A. Gee and G. Norman, eds.), London: Harvester Wheatsheaf, 1992, pp. 84-111.

"Market Structure, Durability, and Quality: A Selective Survey." *Economic Inquiry*, 17 (April 1979): 177-198.

"On the Use of Economic Models in Antitrust: The ReaLemon Case." *University of Pennsylvania Law Review*, 127 (April 1979): 994-1050. Reprinted in *Antitrust Law and Economics* (O. E. Williamson, ed.), Houston: Dame, 1980, pp. 97-153.

"Nonconvexity and Optimal Harvesting Strategies for Renewable Resources" (with T. R. Lewis). *Canadian Journal of Economics*, 12 (November 1979): 677-691.

"Appropriate Government Policy Toward Commercialization of New Energy Supply Technologies." *Energy Journal*, 1 (April 1980): 1-40.

"Advertising and Aggregate Consumption: An Analysis of Causality" (with R. Ashley and C. W. J. Granger). *Econometrica*, 48 (July 1980): 1149-1168.

"On Oligopolistic Markets for Nonrenewable Natural Resources" (with T. R. Lewis). *Quarterly Journal of Economics*, 95 (November 1980): 475-491.

"Qualitative Asymptotic Synthesis in Simple Optimal Control Problems." *Economic Letters*, 5 (1980): 349-352.

"Output and Welfare Implications of Monopolistic Third-Degree Price Discrimination." *American Economic Review*, 71 (March 1981): 242-247.

"Risk and Return on Long-Lived Tangible Assets." *Journal of Financial Economics*, 9 (June 1981): 185-205.

"Monopolistic Two-Part Pricing Arrangements." *Bell Journal of Economics*, 12 (Autumn 1981): 445-466.

"Economies of Scale and Barriers to Entry." *Journal of Political Economy*, 89 (December 1981): 1228-1238.

"Commodity Bundling by Single-Product Monopolies." *Journal of Law and Economics*, 25 (April 1982): 67-71.

"Antitrust and the New Industrial Economics." *American Economic Review*, 72 (May 1982): 24-28.

"Cartel Deception in Markets for Nonrenewable Resources" (with T. R. Lewis). *Bell Journal of Economics*, 13 (Spring 1982): 263-271.

"Another Look at Market Power." *Harvard Law Review*, 95 (June 1982): 1789-1816.

"Product Differentiation Advantages of Pioneering Brands." *American Economic Review*, 72 (June 1982): 349-365. ("Errata," *AER*, 73 (March 1983): 250).

"George Stigler's Contributions to Economics." *Scandinavian Journal of Economics*, 85 (March 1983): 77-86.

"Advertising and Entry Deterrence: An Exploratory Model." *Journal of Political Economy*, 91 (August 1983): 636-653.

"The Impact of Scale and Media Mix on Advertising Agency Costs" (with A. J. Silk and R. Bojanek). *Journal of Business*, 56 (October 1983): 453-475.

"Gaussian Demand and Commodity Bundling." *Journal of Business*, 57 (January 1984): S211-S230.

"Estimating Effective Concentration in Deregulated Wholesale Electricity Markets" (with B. W. Golub). *RAND Journal of Economics*, 15 (Spring 1984): 12-26.

"Imperfect Information and the Equitability of Competitive Prices." *Quarterly Journal of Economics*, 99 (August 1984): 441-460.

"Adversary Hydro Relicensing Applications: Using Economic Efficiency Criteria" (with P. L. Joskow). *Public Utilities Fortnightly*, 114 (20 December 1984): 22-28.

"Econometric Diagnosis of Competitive Localization." *International Journal of Industrial Organization*, 3 (March 1985): 57-70.

"Do Markets Differ Much?" *American Economic Review*, 75 (June 1985): 341-351.

"Estimated Parameters as Independent Variables: An Application to the Costs of Electric Generating Units" (with P. L. Joskow). *Journal of Econometrics*, 31 (April 1986): 275-305.

"Incentive Regulation for Electric Utilities" (with P. L. Joskow). *Yale Journal on Regulation*, 4 (Fall 1986): 1-49.

"The Empirical Renaissance in Industrial Economics: An Overview" (with T. F. Bresnahan). *Journal of Industrial Economics*, 35 (June 1987): 371-378.

"Collusion versus Differential Efficiency: Testing Alternative Hypotheses." *Journal of Industrial Economics*, 35 (June 1987): 399-425.

"Ease of Entry: Has the Concept Been Too Readily Applied?" *Antitrust Law Journal*, 56 (1987): 41-51.

"The Performance of Coal-Burning Electric Generating Units in the United States: 1960-1980" (with P. L. Joskow). *Journal of Applied Econometrics*, 2 (April 1987): 85-109.

"Horizontal Merger Policy: Problems and Changes." *Journal of Economic Perspectives*, 1 (Fall 1987): 41-54.

"Competitive Advantage and Collusive Optima." *International Journal of Industrial Organization*, 5 (December 1987): 351-367.

"Industrial Economics: An Overview." *Economic Journal*, 98 (September 1988): 643-681. Reprinted in *Surveys in Economics*, Vol. 2 (A.J. Oswald, Editor), Oxford: Basil Blackwell, 1991, pp. 51-89.

"Perceptual Maps and the Optimal Location of New Products: An Integrative Essay" (with J.-F. Thisse). *International Journal of Research in Marketing*, 5 (1988): 225-249.

"Intra-Industry Profitability Differences in U.S. Manufacturing: 1953-1983." *Journal of Industrial Economics*, 37 (June 1989): 337-357.

"An Expository Note on Depreciation and Profitability under Rate-of-Return Regulation." *Journal of Regulatory Economics*, 1 (September 1989): 293-298.

"Good Regulatory Regimes." *RAND Journal of Economics*, 20 (Autumn 1989): 417-436.

"Continuity and Change in the Economics Industry." *Economic Journal*, 101 (January 1991): 115-121. Reprinted in *The Future of Economics* (J.D. Hey, ed.), Oxford: Basil Blackwell, 1992, pp. 115-121.

"Sunk Cost and Market Structure: A Review Article." *Journal of Industrial Economics*, 40 (June 1992): 125-134.

"Comparing Greenhouse Gases for Policy Purposes." *Energy Journal*, 14 (1993): 245-255.

"Symposium on Global Climate Change." *Journal of Economic Perspectives*, 7 (Fall 1993): 3-10.

"Competition Policy in Russia During and After Privatization" (with P.L. Joskow and N. Tsukanova). *Brookings Papers on Economic Activity, Microeconomics*, 1994: 301-374. [Awarded the 1995 Edward A. Hewett Prize by the American Association for the Advancement of Slavic Studies.]

"Economic Aspects of Payment Card Systems and Antitrust Policy Toward Joint Ventures" (with D.S. Evans). *Antitrust Law Journal*, 63 (Spring 1995): 861-901.

"The Benefits of Releasing the Bell Companies from the Interexchange Restrictions" (with P.S. Brandon). *Managerial and Decision Economics*, 16 (July-August 1995): 349-364.

"Privatization in Russia: What Should Be a Firm?" (with P.L. Joskow). *International Journal of the Economics of Business*, 2 (1995): 297-327. Reprinted in *Transaction Cost Economics: Recent Developments* (C. Menard, ed.), Brookfield, VT: Edward Elgar, 1997, pp. 86-126.

"What Have We Learned About Privatization and Regulatory Reform?" *Revista de Análisis Económico,* 10 (November 1995): 21-39. (Remarks in Roundtable Discussion, pp. 303-312.)

“Is There a Role for Benefit-Cost Analysis in Environmental Health and Safety Regulation?” (with K.J. Arrow, M.L. Cropper, G.C Eads, R.W. Hahn, L.B. Lave, R.G. Noll, P.R. Portney, M. Russell, V.K. Smith, and R.N. Stavins). *Science*, 272 (12 April 1996): 221-222. Reprinted in *Economics of the Environment: Selected Readings*, 4th Ed. (R.N. Stavins, ed.), New York: Norton, 1999. pp. 319-324.

“World Carbon Dioxide Emissions: 1950-2050” (with T.M. Stoker and R.A. Judson). *Review of Economics and Statistics*, 80 (February 1998): 15-27.

“The Political Economy of Market-Based Environmental Policy: The US Acid Rain Policy” (with P.L. Joskow). *Journal of Law and Economics*, 41 (April 1998): 37-83. Reprinted in *Economics of the Environment: Selected Readings*, 4th Ed. (R.N. Stavins, ed.), New York: Norton, 1999, pp. 603-645.

“Some Economic Principles for Guiding Antitrust Policy Towards Joint Ventures” (with H. Chang and D.S. Evans). *Columbia Business Law Review*, 1998 (1998): 223-329.

“An Analysis of the Welfare Effects of Long-Distance Market Entry by an Integrated Access and Long-Distance Provider” (with P.J. Hinton, J.D. Zona, and W.E. Taylor). *Journal of Regulatory Economics*, 13 (March 1998): 183-196.

“An Interim Evaluation of Sulfur Dioxide Emissions Trading” (with P.L. Joskow, A.D. Ellerman, J.-P. Montero, and E.M Bailey). *Journal of Economic Perspectives*, 12 (Summer 1998): 53-68.

Reprinted in *Economics of the Environment: Selected Readings*, 4th Ed. (R.N. Stavins, ed.), New York: Norton, 1999, pp. 455-471.

"The Market for Sulfur Dioxide Emissions" (with P.L. Joskow and E.M Bailey). *American Economic Review*, 88 (September 1998): 669-685.

"Household Gasoline Demand in the United States" (with T.M. Stoker). *Econometrica*, 67 (May 1999): 645-662.

"Economic Development and the Structure of the Demand for Commercial Energy" (with R.A. Judson and T.M. Stoker). *Energy Journal*, 20 (1999): 29-57.

"Bill Baxter in the Antitrust Arena: An Economist's Appreciation." *Stanford Law Review*, 51 (May 1999): 1317-1332.

"Antitrust Issues in Schumpeterian Industries." *American Economic Review*, 90 (May 2000): 192-196.

"An Analysis of the Government's Economic Case in *U.S. v. Microsoft*" (with D.S. Evans and A.L. Nichols). *Antitrust Bulletin*, 46 (Summer 2001), pp. 163-251. Reprinted in *Microsoft, Antitrust and the New Economy: Selected Essays* (D.S. Evans, ed.), Boston: Kluwer: 2002.

"Payment Systems and Interchange Fees," *Journal of Industrial Economics*, 50 (June 2002): 103-122.

"Sunk Costs and Antitrust Barriers to Entry," *American Economic Review*, 94 (May 2004): 471-475.

"A Survey of the Economic Role of Software Platforms in Computer-Based Industries," *CESIfo Economic Studies*, 51 (2005): 189-224. (Reprinted, with minor changes, as "Software Platforms." In *Industrial Organization and the Digital Economy* (G. Illig and M. Peitz, eds.). Cambridge: MIT Press, 2006, pp. 31-70.)

"*United States v. Microsoft:* Did Consumers Win?" (with D.S. Evans and A.L. Nichols). *Journal of Competition Law and Economics*, 1 (September 2005): 497-539

"The Industrial Organization of Markets with Two-Sided Platforms" (with D.S. Evans), *Competition Policy International*, 3 (Spring 2007): 151-179. Also in W.D. Collins, ed., Issues in Competition Law and Policy, Chicago: American Bar Association, 2008, pp. 667-693.

"Pricing Patents for Licensing in Standard-Setting Organizations: Making Sense of *FRAND* Commitments" (with A. Layne-Farrar and A.J. Padilla), *Antitrust Law Journal*, 74 (2007): 671-706.

"Standard-Setting, Innovation Specialists, and Competition Policy," *Journal of Industrial Economics*, 57 (September 2009): 526-52.

"Failure to Launch: Critical Mass in Platform Businesses" (with D.S. Evans), *Review of Network Economics*, 9 (2010), Issue 4, Article 1 (26 pages).

"Jeffrey Rohlfs' 1974 Model of Facebook: An Introduction," *Competition Policy International*, 7 (Spring 2011): 301-12.

"Why is Platform Pricing Generally Highly Skewed?" *Review of Network Economics*, 10 (December 2011), Issue 4, Article 1, 11 pages.

"Evaluating Policies to Increase the Generation of Electricity from Renewable Energy," *Review of Environmental Economics and Policy*, 6 (Winter 2012): 45-64.

"'On a level with Dentists?' Reflections on the Evolution of Industrial Organization." *Review of Industrial Organization*, 41 (November 2012): 157-79.

"From 'Green Growth' to Sound Policies: An Overview," *Energy Economics*, 34 (Supplement 1, November 2012): S2-S6.

"The SO_2 Allowance Trading System: The Ironic History of a Grand Policy Experiment," (with R.N. Stavins), *Journal of Economic Perspectives*, 27 (Winter 2013): 103-22.

"The Performance of U.S. Wind and Solar Generators," *Energy Journal*, forthcoming.

CHAPTERS IN BOOKS:

"Advertising and Economic Welfare." In *Advertising and the Public Interest* (S. F. Divita, ed.), Chicago: American Marketing Association, 1974, pp. 82-97.

"Promoting Competition in Tomorrow's Markets for Solar Energy Systems." In *The Solar Market: Proceedings of the Symposium on Competition in the Solar Energy Industry*, U.S. Federal Trade Commission, Washington, D.C.: U.S. Government Printing Office, 1978, pp. 119-135.

"Cartel and Oligopoly Pricing of Nonreplenishable Natural Resources" (with T.R. Lewis). In *Dynamic Optimization and Mathematical Economics* (P. T. Liu, ed.), New York: Plenum, 1980, pp. 133-156.

"The New Industrial Organization and the Economic Analysis of Modern Markets." In *Advances in Economic Theory* (W. Hildenbrand, ed.), Cambridge: Cambridge University Press, 1982, pp. 253-285.

"Optimal Use of Renewable Resources with Nonconvexities in Production" (with T.R. Lewis). In *Essays in the Economics of Renewable Resources* (J. Mirman and D.F. Spulber, eds.), Amsterdam: North-Holland, 1982, pp. 95-111.

"Advertising and Market Structure." In *New Developments in the Analysis of Market Structure* (J. E. Stiglitz and G. F. Mathewson, eds.), Cambridge: MIT Press, 1986, pp. 373-396.

"Standards for Dominant Firm Conduct: What Can Economics Contribute?" In *The Economics of Market Dominance* (D. Hay and J. Vickers, eds.), Oxford: Basil Blackwell, 1987, pp. 61-88.

"Advertising." In *The New Palgrave*, Vol. 1 (J. Eatwell, M. Milgate, and P. Newman, eds.), New York: Macmillan, 1987, pp. 34-36.

"Industrial Organization." In *The New Palgrave*, Vol. 2 (J. Eatwell, M. Milgate, and P. Newman, eds.), New York: Macmillan, 1987, pp. 803-808.

"George Stigler's Contributions to Microeconomics and Industrial Organization." In *The New Palgrave*, Vol. 4 (J. Eatwell, M. Milgate, and P. Newman, eds.), New York: Macmillan, 1987, pp. 499-500.

"The Potential of Incentive Regulation." In *The Market for Energy* (D. Helm, J. Kay, and D. Thompson, eds.), Oxford: Clarendon Press, 1989, pp. 178-187.

"Inter-Industry Studies of Structure and Performance." In *Handbook of Industrial Organization*, Vol. 2 (R. Schmalensee and R. D. Willig, eds.), Amsterdam: North-Holland, 1989, pp. 951-1009.

"Empirical Models of Rivalrous Behavior." In *Industrial Structure in the New Industrial Economics* (G. Bonanno and D. Brandolini, eds.), Oxford: Oxford University Press, 1990, pp. 138-167.

"Economías del Tamaño Empresarial y Poder de Mercado" and "Innovación y Posición Competitiva." In *Concentración Empresarial y Competitividad: España en la C.E.E.* (Xavier Vives and Jordi Gual, eds.), Barcelona: Ariel Economía, 1990, pp. 55-67 and 119-131.

"Agreements Between Competitors." In *Antitrust, Innovation, and Competitiveness* (T. M. Jorde and D. J. Teece, eds.), Oxford: Oxford University Press, 1992, pp. 98-118.

"How Should We Address Economic Costs of Climate Change?" In *Global Climate Change: The Economic Costs of Mitigation and Adaptation* (J.C. White, ed.), New York: Elsevier, 1991, pp. 73-76.

"The Costs of Environmental Protection." In *Balancing Economic Growth and Environmental Goals*, Washington: American Council for Capital Formation Center for Policy Research, 1994, pp. 55-80. (Italian translation: "I costi della protezione abientale," *Energia*, 15 (December 1994): 30-48.)

"What Does Stabilizing Greenhouse Gas Concentrations Mean?" (with H.D. Jacoby and D.M. Reiner). In *Critical Issues in the Economics of Climate Change* (B.P. Flannery and C.A.B. Grezo, eds.), London: IPIECA, 1997, pp. 225-244.

"Tradable Emissions Rights and Joint Implementation for Greenhouse Gas Abatement: A Look Under the Hood." In *The Impact of Climate Change Policy on Consumers: Can Tradable Permits Reduce the Cost?* (C.E. Walker, M.A. Bloomfield, and M. Thorning, eds.), Washington: American Council for Capital Formation, 1998, pp. 39-55.

"Greenhouse Policy Architectures and Institutions." In *Economics and Policy Issues in Climate Change* (W.D. Nordhaus, ed.), Washington: Resources for the Future, 1998, pp. 137-158.

"Joint Venture Membership: Visa and Discover Card (1993)" (with D.S. Evans). In *The Antitrust Revolution, 3rd Ed.* (J. Kwoka and L. White, eds.), Oxford: Oxford University Press, 1998, pp. 286-309.

"The Economics of the Microsoft Case: A Post-Trial Primer" (with D.S. Evans). In *Trial and Error: United States v. Microsoft* (P. Beckner and E.R. Gustafson, eds.), Washington: Citizens for a Sound Economy, 2001, pp. 70-86.

"Some Economic Aspects of Antitrust Analysis in Dynamically Competitive Industries" (with D.S. Evans). In *Innovation Policy and the Economy*, Vol. 2 (A. Jaffe, J. Lerner, and S. Stern, eds.), Cambridge: MIT Press, 2002, pp. 1-49.

"Introduction" (with T.A. Kochan). In *Management: Inventing and Delivering Its Future* (T.A. Kochan and R. Schmalensee, eds.), Cambridge: MIT Press, 2003, pp. 1-13.

"Has the Consumer Harm Standard Lost its Teeth?" (with H.H. Chang and D.S. Evans). In *High-Stakes Antitrust: The Last Hurrah?* (R.W. Hahn, ed.), Washington: Brookings Institution Press, 2003, pp. 72-116.

"The Economics of Interchange Fees and Their Regulation: An Overview" (with D.S. Evans). In *Interchange Fees in Credit and Debit Card Industries: What Role for Public Authorities?* Kansas City: Federal Reserve Bank of Kansas City, 2005, pp. 77-120.

"Thoughts on the Chicago Legacy in Antitrust." In *Where the Chicago School Overshot the Mark: The Effect of Conservative Economic Analysis on U.S. Antitrust* (R. Pitofsky, ed.), New York: Oxford University Press, 2008, pp. 11-23.

"Innovation and Evolution of the Payments Industry" (with D.S. Evans). In *Moving Money* (R.E. Litan and M.N. Baily, eds.), Washington: Brookings Institution, 2009, pp. 36-76.

"Epilogue." In *Post-Kyoto International Climate Policy: Implementing Architectures for Agreement* (J.E. Aldy and R.N. Stavins, eds.), Cambridge: Cambridge University Press, 2010, pp. 889-898.

"Toward a Low-Carbon Future in Electricity?" (with B. Moselle and J. Padilla). In *Harnessing Renewable Energy in Electric Power Systems* (B. Moselle, J. Padilla, and R. Schmalensee, eds.), Washington/London: RFF Press, 2010, pp. 1-4.

"Renewable Electricity Generation in the United States." In *Harnessing Renewable Energy in Electric Power Systems* (B. Moselle, J. Padilla, and R. Schmalensee, eds.), Washington/London: RFF Press, 2010, pp. 209-232.

"Epilogue – Whither Renewable Generation?" (with B. Moselle and J. Padilla). In *Harnessing Renewable Energy in Electric Power Systems* (B. Moselle, J. Padilla, and R. Schmalensee, eds.), Washington/London: RFF press, 2010, pp. 328-333.

"The Future of the (U.S.) Electric Grid," (with H.D. Jacoby and J.G. Kassakian). In *Handbook of Energy and Climate Change* (R. Fouquet, ed.), Cheltenham, UK: Edward Elgar, 2013, pp. 125-139.

"Deregulation: Introduction and Overview." In *The Causes and Effects of Deregulation.* (2 Vols., P.W. MacAvoy and R. Schmalensee, eds.), Cheltenham, UK: Edward Elgar, 2014, pp. ix-xv..

"The Antitrust Analysis of Multi-Sided Platform Businesses," (with D.S. Evans). In *Oxford Handbook of International Antitrust Economic*s (R.D. Blair and D.D. Sokol, eds.), Oxford: Oxford University Press, forthcoming.

OTHER PUBLICATIONS:

"The Computer Model of Energy Production without Fast Breeder Reactors" and "The Computer Model of Fast Breeder Demands and Prices" (with P. W. MacAvoy). Appendices E and F in P.W. MacAvoy, *Economic Strategy for Developing Nuclear Breeder Reactor*, Cambridge: MIT Press, 1969, pp. 186-199.

"Theory, Fact, and Policy: A Reply to Professor Barten." *Recherches Economiques de Louvain*, 41 (March 1975): 63-66.

Measuring External Effects of Solid Waste Management (with R. Ramanthan, W. Ramm, and D. Smallwood). Washington, D.C.: U.S. Environmental Protection Agency, Socioeconomic Environmental Studies Series, 1975.

"Option Demand and Consumer's Surplus: Reply." *American Economic Review*, 65 (September 1975): 737-739.

"Advertising, Concentration, and Profits: Comment." In *Issues in Advertising: The Economics of Persuasion* (D. C. Tuerck, ed.), Washington, D.C.: American Enterprise Institute, 1978, pp. 280-284.

"Remarks." In *The Conglomerate Corporation* (R. D. Blair and R. F. Lanzillotti, eds.), Cambridge: Oelgeschlager, Gunn & Hain, 1981, pp. 365-368.

"Income-Distributional Concerns in Regulatory Policymaking: Comment." In *Studies in Public Regulation* (G. Fromm, ed.), Cambridge: MIT Press, 1981, pp. 112-117.

"Comment on Beales, Craswell, and Salop." *Journal of Law and Economics*, 24 (December 1981): 541-544.

Review of C. C. von Weizsacker, *Barriers to Entry*. *Journal of Economic Literature*, 21 (June 1983): 562-564.

"Comments." In *Telecommunications Access and Public Policy* (A. Baughcum and G. R. Faulhaber, eds.), Norwood, N.J.: Ablex, 1984, pp. 76-80.

Review of D. J. Teece, ed., *The Competitive Challenge*. *Journal of Economic Literature*, 26 (December 1988): 1779-1780.

"Regulation and Antitrust in the Bush Administration." *Antitrust Law Journal*, 58 (1989): 475-480.

"Comment on Katz and Ordover." *Brookings Papers on Economic Activity: Microeconomics*, 1990: 194-197.

"Commentary." In *Environmental Policy and the Cost of Capital*, Washington: American Council for Capital Formation Center for Policy Research, 1990, pp. 104-7.

"Comment on Mannering and Winston." *Brookings Papers on Economic Activity: Microeconomics*, 1991: 107-110.

"A Comprehensive and Balanced Energy Policy." *Environmental Forum*, 8 (May/June 1991): 41-42.

"Commentary." In *U.S. Environmental Policy and Economic Growth: How Do We Fare?* Washington: American Council for Capital Formation Center for Policy Research, 1992, pp. 48-51.

The Economics of the Payment Card Industry (with D.S. Evans). Cambridge: National Economic Research Associates, Inc., 1993.

Review of J. Broome, *Counting the Cost of Global Warming*; William R. Cline, *The Economics of Global Warming*; and Alan S. Manne and Richard G. Richels, *Buying Greenhouse Insurance: The Economic Costs of* CO_2 *Limits*. *Journal of Economic Literature*, 32 (June 1994): 738-741.

"Green Costs and Benefits: The Buck Stops Where?" In *Environment Strategy America 1994/95* (W.K. Reilly, ed.), London: Campden, 1994, pp. 16-17.

Review of R. Wilson, *Nonlinear Pricing*. *Journal of Political Economy*, 102 (December 1994): 1288-1291.

"Commentary." In *Strategies for Improving Environmental Policy and Increasing Economic Growth*, Washington: American Council for Capital Formation, Center for Policy Research, 1995, 32-35.

"A Guide to the Antitrust Economics of Networks" (with D.S. Evans). *Antitrust Magazine,* 10 (Spring 1996): 36-40.

"Ways I Have Worked." *The American Economist*, 40 (Fall 1996): 37-43. Reprinted in *Passion and Craft: How Economists Work* (M. Szenberg, ed.), Ann Arbor: University of Michigan Press, 1998, pp. 243-255.

"Commentary." In *Climate Change Policy, Risk Prioritization, and Economic Growth*, Washington: American Council for Capital Formation Center, for Policy Research, 1997, pp. 65-69.

"Kyoto's Unfinished Business" (with H.D. Jacoby and R.G. Prinn). *Foreign Affairs*, 77 (July/August 1998): 54-66. Reprinted in *Economics of the Environment: Selected Readings*, 4th Ed. (R.N. Stavins, ed.), New York, Norton: 1999, pp. 517-526.

"Comment on 'Competition, Information, and Development,' by Jean-Jacques Laffont." In *Annual Bank Conference on Development Economics 1998* (B. Pleskovic and J.E. Stiglitz, eds.), Washington: The World Bank, 1999, pp. 262-266.

"Commentary." In *Climate Change Policy: Practical Strategies to Promote Economic Growth and Environmental Quality* (C.E. Walker, M.A. Bloomfield, and M. Thorning, eds.), Washington: American Council for Capital Formation, Center for Policy Research, 1999, pp. 33-38.

"A Monopolist would *Still* Charge More for Windows: A Comment on Werden" (with B. Reddy, D.S. Evans, and A. Nichols). *Review of Industrial Organization*, 18 (May 2001): 263-268.

"A Monopolist would *Still* Charge More for Windows: A Comment on Werden's Reply" (with B. Reddy, D.S. Evans, and A. Nichols). *Review of Industrial Organization*, 18 (May 2001): 273-274.

"Comments" (On Robert E. Litan and Carl Shapiro, "Antitrust Policy in the Clinton Administration"). In *American Economic Policy in the 1990s* (J.A. Frankel and P.R. Orzag, eds.), Cambridge: MIT Press, 2002, pp. 493-499.

"Lessons from the Microsoft Case." European Investment Bank Lecture Series, Florence: European University Institute, 2002.

"Interchange Fees: A Review of the Literature." In *The Payment Card Economics Review, Vol. 1*, Cambridge: payingwithplastic.org/National Economic Research Associates, 2003, pp. 25-44.

"The Retailer Class Action Antitrust Case Against the Card Associations" (with H.H. Chang and D.S. Evans). In *The Payment Card Economics Review, Vol. 2*, Cambridge: payingwithplastic.org/National Economic Research Associates, Winter 2004, pp. 123-141.

"El Debate Sobre las Tasas de Intercambio: Una Visión de Conjunto" (with D.S. Evans). *Papeles de Economia Española*, Número Extraordinario, 2006, pp. 2-17.

"Where's the 'B' in B-Schools?" *Business Week*, November 27, 2006, p. 118.

"Pick your Pricing" (with D.S. Evans). *Chief Executive*, July/August 2007.

"New Risks, New Products, and New Regulations: Insurance for the 21st Century," *ICFAI Journal of Risk and Insurance*, 4 (July 2007): 7-18.

"Economic Analysis of Class Certification." *Global Competition Policy*, June 2008, Release 2. Available at http://www.globalcompetitionpolicy.org/index.php?&id=1184&action=907.

"Should New Merger Guidelines Give UPP Market Definition?" *GCP: The Antitrust Chronicle*, December 2009, Release 1. Available at https://www.competitionpolicyinternatinal.com/dec091/.

"Comment on "Pharmaceutical Price Discrimination and Social Welfare" (by Frank R. Lichtenberg)," *Capitalism and Society*, 5 (2010), Issue 1, Article 5. DOI: 10.2202/1932-0213.1067 Available at: http://www.bepress.com/cas/vol5/iss1/art5

"The Net Effects of the Proposed Durbin Fee Reductions on Consumers and Small Business" (with D.S. Evans and R.E. Litan). *The Lydian Journal*, Issue 5, March 2011, Available at http://www.pymnts.com/journal/

"AT&T/T-Mobile: Does Efficiency Really Count?" (with H. Chang and D.S. Evans), *CPI Antitrust Chronicle*, 10 (October 2011), Article 2, 5 pages. Available at https://www.competitionpolicyinternational.com/file/view/6564.

"Gridlock in 2030?" (with T.D. Heidel and J.G. Kassakian), *Public Utilities Fortnightly*, 150 (January 2012): 22-28.

"Policy Challenges and Technical Opportunities on the U.S. Grid" (with T.D. Heidel and J.G. Kassakian), *IEEE Power & Energy Magazine*, May/June 2012, 30-37.

"Summary for Policy Makers" (with M. Webster), in *Report from Growing Concerns, Possible Solutions: The Interdependency of Natural Gas and Electricity Systems*, Cambrdige: MIT Energy Initiative, June 2014, pp. 2-6. Available at http://mitei.mit.edu/system/files/2014-MITEI-Report-Growing-Concerns-Possible-Solutions.pdf.

TESTIMONY:

U.S. Federal Trade Commission, *In re Kellogg Company et al*, Docket No. 8883. (Deposition and hearing testimony: July 25 - August 12, 1977 for FTC staff on a range of issues.)

U.S. District Court for the Northern District of California, *In Re Data General Corporation*, MDL Docket No. 369-WHO, April 21, 1981. (Deposition and trial testimony on market power.)

U.S. Tax Court, *Ciba-Geigy Corporation v. Commissioner of the Internal Revenue Service*, Docket No. 2831-78. (Trial testimony for petitioner on reasonable patent royalties, October 1, 1983.)

U.S. Federal Communications Commission, *In the Matter of Long-Run Regulation of AT&T's Basic Domestic Interstate Services*, CC Docket No. 83-1147. (Statement on costs of asymmetric regulation submitted on behalf of AT&T, April 2, 1984.)

U.S. Federal Communications Commission, Third Computer Inquiry, CC Docket No. 85-229. (Paper entitled "The Regulatory Framework Proposed in Computer III" submitted on behalf of AT&T, November 13, 1985.)

U.S. District Court for the Central District of California, *USAIR, Inc., et al., vs. American Airlines, Inc., and United Air Lines, Inc.*, CV No. 84-8918 ER (Tx). Deposition regarding air passenger computer reservation systems antitrust litigation, December 15, 1987 and December 16, 1987.

Oregon Circuit Court for Douglas County, *Emerald People's Utility District v. Pacificorp*, Docket No. L87-1282. (Trial testimony for defendant on the economic effects of a dam condemnation, June 3, 1988.)

U.S. Senate, Committee on Banking, Housing, and Urban Affairs, September 21, 1989. (Confirmation hearing.)

U.S. House of Representatives, Committee on Energy and Commerce, Subcommittee on Energy and Power, October 11, 1989. (Administration testimony on the emissions allowance trading provisions of its acid rain proposal.)

U.S. Congress, Joint Economic Committee, February 8, 1990. (With Michael J. Boskin and John B. Taylor; Administration testimony on the 1990 *Economic Report of the President*.)

U.S. Senate, Committee on Energy and Natural Resources, March 26, 1990. (Administration testimony on the world oil outlook.)

U.S. Senate, Committee on Energy and Natural Resources, Subcommittee on Energy Research and Development, May 8, 1990. (Administration testimony on the applicability of new source review to existing steam electric generating units, the "WPECo problem.")

U.S. Congress, Joint Economic Committee, February 12, 1991. (With Michael J. Boskin and John B. Taylor; Administration testimony on the 1991 *Economic Report of the President*.)

U.S. Senate, Committee on Finance, Subcommittee on Social Security and Family Policy, March 4, 1991. (Administration testimony on measuring the status of children.)

U.S. Senate, Committee on Energy and Natural Resources, March 18, 1991. (Administration testimony on the applicability of new source review to existing steam electric generating units, the "WPECo problem")

Massachusetts Department of Public Utilities, *Investigation into Environmental Externalities*, D.P.U. Docket No. 91-131. (Written testimony (October 4 and December 13, 1991), cross-examination (January 28, 1992) on environmental adders.)

U.S. District Court, *Visa U.S.A., Inc. v. SCFC ILC, Inc. d/b/a Mountainwest Financial, Inc.*, (Deposition and trial testimony before a jury, October 1992, on denial of membership by a joint venture.)

Federal Communications Commission (ET Docket 92-1000) on behalf of BellSouth Corporation, "Assigning PCS Spectrum: An Economic Analysis of Eligibility Requirements and Licensing Mechanisms," (with William E. Taylor), filed November 9, 1992.

U.S. District Court for the Middle District of Florida, Orlando Division, *Florida Municipal Power Agency v. Florida Power and Light Company*, Case No. 92-35-CIV-PR:-3A22 (Deposition testimony on standards for the pricing of electricity transmission services, March 2, 1993.)

Federal Communications Commission (Amendment of Part 90 of the commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems) PR docket No. 93-61 on behalf of PacTel Teletrac, "The Economics of Co-Channel Separation for Wideband Pulse Ranging Location Monitoring Systems," (with William E. Taylor), filed June 29, 1993.

Federal Communications Commission (CC Docket 94-1) on behalf of the United States Telephone Association: "Comments on the USTA Pricing Flexibility Proposal," filed as Attachment 4 to the *United States Telephone Association* Comments, May 9, 1994, "Reply Comments: Market Analysis and Pricing Flexibility for Interstate Access Services," filed as Attachment 3 to the *United States Telephone Association Reply Comments*, June 29, 1994 (with William E. Taylor).

Thompson Everett, Inc. v. National Cable Advertising, L.P., Cable Networks, Inc., and Cable Media Corporation, U.S. District Court (E.D. Va.). (Expert report (with Linda McLaughlin), March 11, 1994 and deposition testimony, March 24, 1994 on behalf of defendants concerning the competitive effect of exclusive cable advertising representation contracts and their impact on plaintiff.)

U.S. Federal Energy Regulatory Commission, *Revisions to Oil Pipeline Regulation Pursuant to the Energy Policy Act of 1992*, Docket No. RM93-11-000. (Paper entitled "An Economic Analysis of Oil Pipeline Markets" submitted on behalf of Sinclair Oil Corporation, January, 1994).

Princeton Economics Group v. AT&T, No. L-91-3221, in the Superior Court of New Jersey, Mercer County, Law Division (deposition testimony 1994).

Florida Public Utilities Commission, Docket Nos. 930548-EG, 930549-EG, 930550-EG and 9305551-EG. (Prepared direct testimony on environmental adders for the Center for Energy on Economic Development, Filed May 19, 1994.)

U.S. District Court for the District of Columbia, *United States of America v. Western Electric Co., Inc. and American Telephone and Telegraph Company*, Civil Action No. 82-0192. (Statement on permitting RBOC entry into inter-LATA markets submitted on behalf of four RBOC's, July 6, 1994.)

U.S. District Court for the Northern District of Illinois Eastern Division, *In re: Brand Name Prescription Drugs Antitrust Litigation*, (Deposition, testimony on class certification, September 18, 1994.)

Connecticut Department of Public Utilities, Docket No. 99-07-02. ("Economic Principles For Classifying Telecommunications Services As Competitive Or Emerging Competitive," testimony submitted on behalf of Southern New England Telephone on October 17, 1994).

U.S. District Court (Southern District of New York), *Federal Trade Commission v. B.A.T. Industries P.L.C., et al*, 94 Civ 7849 (MP). Deposition and Trial (December 14, 1994) testimony on effects of a merger, for American Tobacco.

U.S. District Court (Southern District of New York), *Union Carbide Corporation v. Himont U.S.A., Inc., et al*, 95 Civ. 0134. Deposition (February 1, 1995) and trial (February 15-16, 1995) testimony for plaintiff on effects of injunctive relief.)

U.S. District Court (Northern District of Alabama, Southern Division), *Southtrust Corporation v. Plus System, Inc., Network, Inc., and Southeast Switch, Inc.* Civil Action No. CV-93-P-2291-S. Declaration filed December 10, 1994; telephone Deposition, April 18, 1995.

California Public Utilities Commission, (Investigation No. I.95-05-047), on behalf of Pacific Bell, "Incentive Regulation and Competition: Issues for the 1995 Inventive Regulation Review." (with William E. Taylor and Timothy J. Tardiff), filed September 18, 1995.

Litton Systems, Inc., v. Honeywell, Inc., No.CV-90-4823 MRP, in the United States District Court for the Central District of California (deposition testimony 1995, trial testimony 1996).

Postal Rate Commission, Evidentiary Hearing, Rebuttal Testimony, Vol. 33, MC95-1 (Transcript of Proceeding October 17, 1995).

Federal Communications Commission (CC Docket No. 96-0221) on behalf of NYNEX and Bell Atlantic, affidavit concerning the competitive effects of the proposed NYNEX-Bell Atlantic merger, filed October 23, 1996.

Bell Atlantic Corporation, et. al. v. AT&T Corporation et. al., No. 5-96-CV45 U.S. District Court for Eastern District of Texas (Texarkana Division), Deposition January 8, 1997.

Federal Communications Commission (CC Docket 96-262) in the matter of Access Charge Reform and Price Cap Performance Review for Local Exchange Carriers, "Economic Aspects of Access Reform," with William Taylor, filed January 29, 1997.

New York Public Service Commission on behalf of New York Telephone Company, "Competitive Effects of Allowing NYNEX to Provide InterLATA Services Originating in New York State," public interest analysis of NYNEX's proposed entry into in-region long distance service, (with William E. Taylor and Harold Ware), filed February 18, 1997.

Federal Communications Commission (CC Docket 96-262 et. al.), on behalf of USTA: a report entitled, "An Analysis of the Welfare Effects of Long Distance Market Entry by an Integrated Access and Long Distance Provider", *ex parte* filed March 7, 1997, (with William E. Taylor, Douglas Zona and Paul Hinton).

Declaration, *In the Matter of Application SBC Communications Inc., Southwestern Bell Telephone Company, and Southwestern Bell Communications Services, Inc., for Provision of In-Region, InterLata Services in Oklahoma*, CC Docket No. 97-121 (April 11, 1997). Also Reply.

Maine Public Utilities Commission on behalf of NYNEX: affidavit regarding competitive effect of NYNEX entry into InterLATA markets. Filed May 27, 1997, (with William E. Taylor, Kenneth Gordon, Harold Ware).

Declaration, *In the Matter of Application by BellSouth for Provision of In-Region InterLATA Services in South Carolina*, CC Docket 97-208- August 18, 1997.

Affidavit, Before the FCC, *In the Matter of: Application for Bell Atlantic Corporation for Authority to Provide In-Region, InterLata Service in the State of New Jersey*, (with Harold Ware). September 1997.

Reply to Comments on BellSouth's Application for Section 271, Authority in South Carolina, Declaration on Behalf of BellSouth, November 14, 1997.

Federal Communications Commission (*ex parte* CC Docket No. 96-262 et. al.), "The Need for Carrier Access Pricing Flexibility in Light of Recent Marketplace Developments: A Primer," research paper prepared on behalf of United States Telephone Association. Filed January 21, 1998 (with William E. Taylor).

Testimony on behalf of *Southwestern Bell* regarding its application to enter the long-distance telephone market in Oklahoma, February 13, 1998, and rebuttal, April 21, 1998.

Testimony on behalf of *Southwestern Bell* regarding its application to enter the long-distance telephone market in Kansas, February 17, 1998 (Docket No. 97-SWBT-411-GIT).

Testimony on behalf of *Southwestern Bell* regarding its application to enter the long-distance telephone market in Arkansas, February 24, 1998 (Docket No. 98-048-U).

Testimony on behalf of *Southwestern Bell* regarding its application to enter the long-distance telephone market in Texas, March 2, 1998 (Docket No. 16251) and rebuttal, April 17, 1998.

Federal Communications Commission, *In the Matter of Applications of WorldCom, Inc. and MCI Communications Corporation for Transfer of Control of MCI Communications Corporation to WorldCom, Inc.* (CC Docket No. 97-211), Affidavit on behalf of GTE Corporation analyzing the likely economic effects of the proposed acquisition of MCI by WorldCom, (with William E. Taylor), March 13, 1998.

Testimony on behalf of *Southwestern Bell* regarding its application to enter the long-distance telephone market in California, March 26, 1998 (Docket No. 98-12-069) and rebuttal, May 17, 1998.

Declaration on behalf of *BellSouth* before the Federal Communications Commission, Second Application by BellSouth Corporation, BellSouth Telecommunications, Inc., and BellSouth Long Distance, Inc., for Provision on In-Region, InterLATA Services in Louisiana, (CC Docket No. 98-121), July 9, 1998.

Expert Report, *U.S. v. Microsoft Corporation* and *State of New York, ex rel. v. Microsoft Corporation*, U.S. District Court for the District of Columbia, (Civil Action No. 98-1232 (TPJ) and No. 98-1233 (TPJ)), September 1998.

Declaration, *Bristol Technology, Inc. v. Microsoft Corporation,* U.S. District Court for the District of Connecticut, (CV-98-1657 (JCH)), September 1998.

U.S. v. Microsoft Corporation and *State of New York, ex rel. v. Microsoft Corporation*, U.S. District Court for the District of Columbia, (Civil Action No. 98-1232 (TPJ) and No. 98-1233 (TPJ)), deposition testimony, October 1998.

Bristol Technology, Inc. v. Microsoft Corporation, U.S. District Court for the District of Connecticut, (CV-98-1657 (JCH)), deposition testimony and testimony at preliminary injunction hearing, October 1998, and October 1998.

Testimony on behalf of *Southwestern Bell* regarding its application to enter the long-distance telephone market in Missouri, November 20, 1998 (Docket TO-99-227) and surrebuttal, February 4, 1999.

Expert Report, *Caldera, Inc., v. Microsoft Corporation*, U.S. District Court for the District of Utah, (96-CV-0645B), December 1998.

U.S. v. Microsoft Corporation and *State of New York, ex rel. v. Microsoft Corporation*, U.S. District Court for the District of Columbia, (Civil Action No. 98-1232 (TPJ) and No. 98-1233 (TPJ)), trial testimony, January 1999.

Caldera, Inc., v. Microsoft Corporation, U.S. District Court for the District of Utah, (96-CV-0645B), deposition testimony, February 1999.

Declaration, *In Re Visa Check/MasterMoney Antitrust Litigation*, U.S. District Court for the Eastern District of New York, (CV-96-5238), June 1999.

Expert Report and Rebuttal Expert Report, *U.S. v. Visa U.S.A. Inc., Visa International Corp., and MasterCard International*, U.S. District Court for the Southern District of New York, (98-CV-7076 (BSJ)), February 29, 2000, and March 20, 2000.

U.S. v. Visa U.S.A. Inc., Visa International Corp., and MasterCard International, U.S. District Court for the Southern District of New York, (98-CV-7076 (BSJ)), deposition testimony and trial testimony, April 2000, and August 2000.

U.S. Federal Energy Regulatory Commission, (Docket No. EL05-121-000) on behalf of the Responsible Pricing Alliance (With D. S. Evans; Trial testimony evaluating the testimonies of American Electric power Services Company and Allegheny Power ("AEP/AP") and Baltimore Gas and Electric Company and Old Dominion Electric Cooperative, Inc. ("BGE/ODEC"), November, 2005).

Expert Report on behalf of Qualcomm, "An assessment of Professors Scott Morton and Seabright's opinion on Qualcomm's FRAND commitments and the need for competition law intervention," submitted to the European Commission, Case No. COMP/C-3/39.247-252 (with Vincenzo Denicolò, Anne Layne-Farrar, A. Jorge Padilla, Klaus Schmidt, David Teece, and Xavier Vives) filed March 8, 2007.

Declaration, In Re ATM Antitrust Litigation, U.S. District Court for the Northern District of California, San Francisco Division (Case No. C-04-2676-CRB) August 2007.

Deposition, In Re ATM Antitrust Litigation, U.S. District Court for the Northern District of California, San Francisco Division (Case No. C-04-2676-CRB) November 2007.

Supplemental Declaration, In Re ATM Antitrust Litigation, U.S. District Court for the Northern District of California, San Francisco Division (Case No. C-04-2676-CRB) February 2008.

U.S. Tax Court, *In re Capital One Financial Corporation and Subs.*, Docket Nos. 19519-05 and 24260-05. (Expert Report, October 12, 2007; Rebuttal Expert Report, November 16, 2007; Affidavit December 7, 2007; and trial testimony, December 8, 2008 on interchange fees.)

Expert Report in Direct Purchaser Class Action, In Re: TFT-LCD (Flat Panel) Antitrust Litigation, U.S. District Court for the Northern District of California, San Francisco Division (Master File No. C07-1827 SI) February 2012.

Expert Report in Indirect Purchaser Class Action, In Re: TFT-LCD (Flat Panel) Antitrust Litigation, U.S. District Court for the Northern District of California, San Francisco Division (Master File No. C07-1827 SI) February 2012.

Expert Report (July 24, 2012), Rebuttal Report (August 10, 2012), Deposition (August 22, 2012), and Trial Testimony (November 19, 2012) on behalf of Motorola Mobility in *Microsoft Corporation v. Motorola, Inc., et al*, U.S. District Court for the Western District of Washington (Case No. 2:10-cv-01823).

Expert Declaration (December 5, 2013), Deposition (December 7, 2013), and Testimony at Preliminary Injunction Hearing (December 10, 2013) on behalf of SESAC in *Radio Music License Committee v. SESAC, INC., et al.*, U.S. District Court for the Eastern District of Pennsylvania (Case No. 2:12-cv-05807-CDJ-LAS).

Expert Report (February 24, 2014) and Deposition (March 27, 2014) on behalf of Fujitsu in *Fujitsu Limited vs. Tellabs, Inc. et al.*, U.S. District Court for the Northern District of Illinois (Civil Actions No. 09-cv-04530, 12-cv-03229, and 13-cv-04991 (consolidated)).

November 2014

REDACTED – FOR PUBLIC INSPECTION

CERTIFICATE OF SERVICE

I hereby certify that on December 23, 2014, I caused true and correct copies of the foregoing to be served by electronic mail upon the following counsel:

Matthew A. Brill
LATHAM & WATKINS LLP
555 11th Street, NW, Suite 1000
Washington, DC 20004
matthew.brill@lw.com
Counsel for Time Warner Cable Inc.

Francis M. Buono
WILLKIE FARR & GALLAGHER LLP
1875 K Street, NW
Washington, DC 20006
fbuono@willkie.com
Counsel for Comcast Corp.

Samuel L. Feder
JENNER & BLOCK
1099 New York Ave., NW
Suite 900
Washington, DC 20001
sfeder@jenner.com
Counsel for Charter Communications, Inc.

Jim Bird
Federal Communications Commission
Office of General Counsel
445 12th Street, SW
Washington, DC 20554
transactionteam@fcc.gov

William Dever
Federal Communications Commission
Wireline Competition Bureau
445 12th Street, SW
Washington, DC 20554
william.dever@fcc.gov

Marcia Glauberman
Federal Communications Commission
Media Bureau
445 12th Street, SW
Washington, DC 20554
marcia.glauberman@fcc.gov

Vanessa Lemmé
Federal Communications Commission
Media Bureau
445 12th Street, SW
Washington, DC 20554
vanessa.lemme@fcc.gov

Best Copy Printing, Inc.
fcc@bcpiweb.com

Sincerely,

Christopher Bjornson
Steptoe & Johnson LLP